PREVENTIVE & SOCIAL MEDICINE

History of Public Health – Questions

1. **Samuel Hahneman is referred to as founding Father of:**
   a. Ayurveda b. Allopathy
   c. Homeopathy d. Yoga

2. **Who is known as 'First true Epidemiologist'?**
   a. John Snow b. Hippocrates
   c. James Lind d. Joseph Lister

3. **Match the following:**

A	Pattenkoffer	I	Spontaneous Generation Theory
B	Pasteur	II	Germ Theory of Disease
C	Aristotle	III	Multifactorial Causation

   a. A-III, B-I, C-II b. A-III, B-II, C-I
   c. A-II, B-I, C-III d. A-II, B-III, C-I

4. **Match the following:**

A	Edward Jenner	I	Transmission of Yellow Fever
B	James Lind	II	Vaccination against small pox
C	Reed	III	Prevention of Scury

   a. A-III, B-I, C-II b. A-III, B-II, C-I
   c. A-II, B-I, C-III d. A-II, B-III, C-I

5. **Malarial parasite was discovered by:**
   a. Robert Koch
   b. Louis Pasteur
   c. Charles Alphonse Laveran
   d. Ronald Ross

6. **The Lawyer who designed the public Health Act 1848 was:**
   a. John Snow b. Edwin Chadwick
   c. Joseph Lister d. Willam Farr

7. **First bacterium discovered as cause of a disease was:**
   a. TB bacillus
   b. Leprosy bacillus
   c. Anthrax bacillus
   d. Plague bacillus

8. **Match the following:**

A	Jenner	I	Rabies & Anthrax
B	Pasteur	II	Small pox
C	Calmette& Guerin	III	Polio
D	Salk	IV	Tuberculosis

   a. A-II, B-I, C-IV, D-III
   b. A-II, B-III, C-IV, D-I
   c. A-IV, B-I, C-III, D-II
   d. A-I,B-IV, C-II,D-III

9. **Which system of medicine claims to be the world's first organized body of medical knowledge?**
   a. Indian b. Chinese
   c. Egyptian d. Mesopotamian

10. **Cradle of civilization is:**
    a. Mesopotamia
    b. Haddapa
    c. Mohenjodaro
    d. Sindughati

1. c	2. b	3. b	4. d	5. c	6. b	7. b	8. a	9. b	10. a

History of Public Health – Explanations

1. C. Homeopathy

Father of _____	Scientist
Medicine	Hippocrates
Indian Medicine	Charaka
Modern Surgery	Ambroise Pare
Hindu God of Medicine	Dhanvantri
Indian Surgery	Sushruta (Susruta Samhiti)
Epidemiology	John Snow
Genetics	Gregor Mendel
Homeopathy	Samuel Hahneman
Health statistics	John Graunt
EBM (evidence based medicine)	D Sackett
Nutrition	Antonie Lavoisier
Father of Modern Microbiology	Louis Pasteur
Bacteriology	Robert Koch

2. B. Hippocrates

- 1st true epidemiologist: Hippocrates
- Father of Modern Epidemiology: John Snow
- Father of Public Health: Cholera
- Founder of epidemiology: Fractosorius

3. B. A-III, B-II, C-I

Theory	Scientist
Germ theory	Louis Pasteur
Multi factorial causation	Pettenkoffer
Spontaneous generation	Aristotle
Growth chart	David Morley
First true epidemiologist	Hippocrates
Population growth	Malthus

4. D. A-II, B-III, C-I

- Edward Jenner:
  - Small Pox vaccine (1st vaccine)
  - Gave the term vaccination
- Louis Pasteur:
  - Gave the term vaccine
  - 3 vaccines – chicken pox, anthrax, rabies
- James Lind:
  - Scurvy Trial (Citrus fruits prevent scurvy)
  - 1st ever clinical trial
  - Walter Reed: Transmission of yellow fever

5. C. Laveran

- RONALD ROSS: Noble prize for life cycle of plasmodium within anopheles
- Laveran:
  - Nobel prize
  - Cause of malaria is a protozoan (discovered malaria parasite)
  - First time that protozoa were shown to be a cause of disease

6. B. Edwin Chadwick

- Enactment of public health act, 1848 in London
- 1st ever act to deal with sanitation

7. B. Leprosy bacillus

- Discovery of the Mycobacterium leprae
- First identification of bacteria as the causative agent of a human disease

8. A. II, B-I, C-IV, D-III

- Edward Jenner:
  - Small Pox vaccine (1st vaccine)
  - Gave the term vaccination
- Louis Pasteur:
  - Gave the term vaccine
  - 3 vaccines – chicken pox, anthrax, rabies
  - Sabin: OPV, JE

- Salk: IPV
- Calmette & Guerrin: BCG

9. **B. Chinese**
   - Pioneer of immunization
   - Bare foot doctors
   - Acupuncture
   - 1st organized system of medicine

10. **A. Mesopotamia**

The cradle of civilization. Mesopotamia, the area between the Tigris and Euphrates Rivers (in modern day Iraq), is often referred to as the cradle of civilization because it is the first place where complex urban centers grew.

Health and Disease – Questions

11. A person who has lost his foot in an accident and is not able to walk is an example of:

a. Disease
b. Disability
c. Impairment
d. Handicap

12. Human Development Index (HDI) doesn't include:

a. Mean years of Schooling
b. Life expectancy at birth
c. Real GDP per capita
d. IMR

13. Not included in human poverty index is

a. % of population not surviving up to 40 years age
b. Underweight for age
c. Occupation
d. % population not using safe water supply

14. Expectation of life free of disability is known as:

a. Park's index
b. Smith's index
c. Sullivan's index
d. Life Index

15. Most universally accepted indicator of health status of whole population and their socio-economic conditions among the following is:

a. MMR
b. IMR
c. Life expectancy
d. Disease notification rates

16. Virulence of a disease is indicated by

a. Proportional mortality rate
b. Specific mortality rate
c. Case fatality rate
d. Amount of GDP spent on control of disease

17. Which of the following is true about DALYs?

a. Life is adjusted for disease
b. Premature death is adjusted for
c. Life expectancy free of disability
d. Years lost to premature death and years lived with disability adjusted for severity of disability

18. Pap Smear Test for detection of carcinoma of cervix is which level of prevention?

a. Primordial
b. Primary
c. Secondary
d. Tertiary

19. "Disability Limitation" is mode of intervention for:

a. Primordial Prevention
b. Primary Prevention
c. Secondary Prevention
d. Tertiary Prevention

20. Which of the following is the most logical sequence?

a. Impairment- Disease- Disability- Handicap
b. Disease- Impairment Disability- Handicap
c. Disease- Impairment- Handicap- Disability
d. Disease- Handicap – Impairment- Disability

21. Which of the following is an example of Disability limitation in poliomyelitis?

a. Reducing occurrence of polio by immunization
b. Arranging for schooling of child suffering from PRPP
c. Resting affected limbs in neutral position
d. Providing calipers for walking

22. Which of the following is primordial prevention?

a. Action taken prior to the onset of disease
b. Prevention of emergence of development of risk factors
c. Action taken to remove the possibility that a disease will ever occur
d. Action that halts the progress of a disease

11. b	12. d	13. c	14. c	15. b	16. c	17. d	18. c	19. d	20. b
21. c	22. b								

23. For optimum utilization of health services in a hospital, bed turnover interval should always be

a. Slightly positive
b. Largely positive
c. Slightly negative
d. Largely negative

24. "Silent epidemic" of the century is:

a. Coronary artery disease
b. Chronic liver disease
c. Chronic obstructive lung disease
d. Alzheimer's disease

25. Which one of following doesn't represent submerged portion of iceberg?

a. Diagnosed cases under treatment
b. Undiagnosed cases
c. Pre- symptomatic cases
d. Carrier's sub clinical cases

26. Which of the following is NOT true regarding pathogenesis of a disease?

a. Screening is of no use in changing course of disease
b. Tertiary prevention is possible
c. Entry of organism occurs
d. Includes subclinical cases

27. Web of causation of disease which statement is most appropriate?

a. Mostly applicable for common diseases
b. Requires complete understanding of all factors associated with causation of disease
c. Epidemiological ratio
d. Helps to suggest ways to interrupt the risk of transmission

28. Transition from increased prevalence of infectious pandemic diseases to manmade disease is known as

a. Paradoxical transition
b. Reversal of transition
c. Epidemiological transition
d. Demographic transition

29. "BEINGS Model of disease causation" does not include

a. Spiritual factors
b. Social factors
c. Religious factors
d. Social factors

30. The period preceding to the onset of disease in man, when the disease agent has not yet entered man but the factors favoring its interaction with human host exist in the environment is known as:

a. Incubation period
b. Pre- pathogenesis period
c. Pathogenesis period
d. Pre- symptomatic period

31. Target group in Secondary prevention

a. Healthy individuals
b. Patients
c. Animals
d. Children

32. School health check up comes under level of prevention

a. Primordial b. Primary
c. Secondary d. Tertiary

33. Desks provided with table top to prevent neck problems is an example of

a. Primordial prevention
b. Primary prevention
c. Specific protection
d. Disability limitation

34. Monitoring of blood pressure which type of prevention

a. Primordial b. Primary
c. Secondary d. Tertiary

35. Consider the following

1. Health education
2. Treatment of hypertension
3. Screening of cervical cancer
4. Changing lifestyle to prevent stress

Which are the examples of primary prevention?

a. 1 and 4 b. 2 and 3
c. 1 and 3 d. 2 and 4

23. a	14. d	25. a	26. a	27. d	28. c	29. c	30. b	31. b	32. c
33. b	34. c	35. a							

Health and Disease – Explanations

11. B. Disability

Impairment	Disability	Handicap
Loss/ Abnormality of psycho, physio or anatomical structure or fn	Restriction in ability to perform a function	Psychological disadvantage
Hand is cut of a painter	Unable to paint	Unemployed

12. D. IMR

HDI (HUMAN DEVELOPMENTAL INDEX)	PQLI (PHYSICAL QUALITY OF LIFE INDEX)
Life expectancy at birth	Life expectancy at age 1
Knowledge (Expected & mean years of schooling): (EYSI + MYSI)/ 2	Literacy rate
Income: real GNI per capita/ GDP in PPP in US$	IMR
Range – 0 to 1	Range – 0 to 100
0.640: Rank 130 (2018 data)	70

13. C. Occupation

HUMAN POVERTY INDEX

- Developed by UN
- Complement of HDI
- Two types: HPI 1 & HPI 2
  - HPI 1 – Developing & Under developed countries (3 indicators)
  - HPI 2 – Developed countries (4 indicators)
- HPI 1 includes Deprivation of:
  - Longevity/ Life expectancy - Probability at birth of not surviving to age 40
  - Knowledge: adult illiteracy rate
  - Decent standard of living: Average of
    - Percentage population not using an improved water source
    - Percentage children underweight for age

14. C. Sullivan's Index

Index	Description
Sullivan	Life expectancy - duration of disability Disability Free Life Expectancy (DFLE)
DALY	Years of life lost (YLL) to premature death & years lived with disability (YLD)
QALY	Measure of both quality & quantity of life lived
HALE	Healthy life expectancy Average number of years that a person can expect to live in "full health" by taking into account years lived in less than full health due to disease and/or injury Best measure of burden of disease & effectiveness of interventions (Earlier DALY)

15. B. IMR

Importance for IMR:

- Single largest age category of mortality
- Most important indicator of:
  - SES (SE development: U5MR)
  - Health status of a community/ country
  - Level of living
  - Effectiveness of MCH services/ Best predictor of govt. Failure
  - Combined parameter for paediatric & obstetric care in country
  - Sensitive indicator of availability & utilization of health services

16. C. Case fatality rate

- **Specific Death Rate:**

- Cause/ disease/ age/ sex/ ..... Specific divided by **mid year population**
- Helps in identifying **"AT RISK group"**
- **Helps in comparison between different causes within the same population**
- **If 2 populations then answer would be standardization**

- **Proportional Mortality Rate:**
  - Deaths due to a specific cause/ disease/ age/ sex/ ..... Per 100/ per 1000 **total deaths**
  - Advantage.
  - **Simplest measure of estimating disease burden**
  - Indicates magnitude of preventable mortality
  - Used when population is not known
- **Case Fatality Rate:**
  - Killing power/ severity of a disease/ Related to virulence of organism
  - Can be used to measure benefits of new therapy i.e, any therapy which prevents mortality will reduce case fatality
  - Name is a rate but actually a **proportion**
  - Complement of survival rate
  - CFR = 1 – survival rate
  - Disadvantages:
  - Time interval is not specified
  - Useful only for acute diseases

17. D. Years lost to premature death and years lived with disability adjusted for severity of disability

DALY IS **Years of life lost (YLL) to premature death & years lived with disability (YLD)**

18. C. Secondary

Preventing	Level of Prevention
Risk factor	Primordial
Disease	Primary
Complication	Secondary
Further Complication	Tertiary

Strategies and Examples:

1. Primordial: Health Promotion Ex – Salt restriction in children
2. Primary: Health Promotion & Specific Protection

Health Promotion	Specific Protection
Overall Improvement in Health	Against one particular disease
Lifestyle/ dietary/ environmental modifications	• Immunization • Chemo/ sero prophylaxis • Usage of contraceptives • Fortification/ Supplementation • Usage of helmets • Minus type desks in schools

3. Secondary: Screening for disease (early diagnosis & treatment) (Screening for risk factor is primary)

Ex – Self breast screening, PAP smear for cervical cancer, Occupational health screening

4. Tertiary: Disability Limitation & Rehabilitation

Disability Limitation	Rehabilitation
Prevents further disability	Prevents further disability + Improvement in function
Ex – Plaster in neutral anatomical position	Ex – Physiotherapy

19. D. Tertiary

Disability Limitation	Rehabilitation
Prevents further disability	Prevents further disability + Improvement in function
Ex – Plaster in neutral anatomical position	Ex – Physiotherapy

20. B. Disease- Impairment Disability- Handicap

REFER TO EXPLANATION 1

21. C. Resting Affected Limbs in Neutral Position

OPTION A IS PRIMARY

OPTION B & D ARE REHABILITATION

22. B. Prevention of emergence of development of risk factors

Preventing	Level of Prevention
Risk factor	Primordial
Disease	Primary
Complication	Secondary
Further Complication	Tertiary

23. A. Slightly Positive

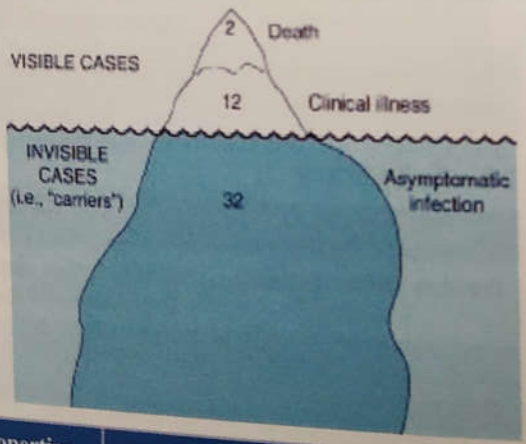
BED UTILIZATION RATE

- Amount of time beds are unoccupied until next patient's admission following a patient's discharge
- Negative: indicate over 100% occupancy, scarcity of beds, over utilization of services
- Positive: indicates vacant beds, underutilization of services
- Slightly positive: indicates optimum utilization of services

24. D. Alzheimer's Disease

- Modern epidemic: Coronary Heart Disease
- Silent epidemic: Alzheimer's disease

25. A. Diagnosed cases under treatment



Properties	Tip of iceberg	Submerged portion of iceberg
Composition	Clinical cases	Hidden cases
Important for	Clinicians	Epidemiologists
Detection by	Diagnostic tests	Screening tests
Level of prevention	Secondary	

26. A. Screening is of no use in vhanging course of disease

During the phase of pathogenesis; entry of the organism has occurred but generally the clinical features are not evident so if screening is done and early treatment is done the disease manifestation can be avoided

27. d. Helps to suggest ways to interrupt the risk of transmission

Option 1: Web of causation can be drawn for rare diseases also

Option 2: Not essential

28. C. Epidemiological transition

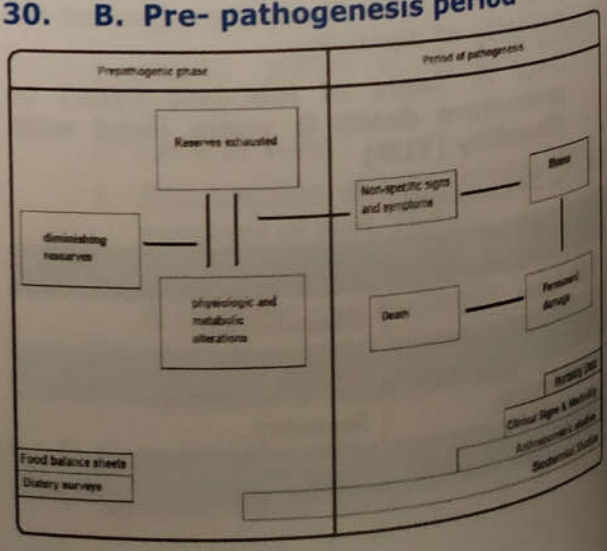
Epidemiological transition means change; in this question one example provided is change from infectious disease to man-made diseases

29. C. Religious Factors

The "BEINGS" Model of Disease Causation

- This concept postulates that human disease and its consequences are caused by a complex interplay of nine different factors –
  - Biological factors innate in a human being,
  - Behavioural factors concerned with individual lifestyles,
  - Environmental factors as physical, chemical and biological aspects of environment,
  - Immunological factors,
  - Nutritional factors,
  - Genetic factors,
  - Social factors,
  - Spiritual factors and
  - Services factors, related to the various aspects of health care services

30. B. Pre- pathogenesis period



31. B. Patients

Preventing	Level of Prevention	Target Group
Risk factor	Primordial	Children
Disease	Primary	Healthy individuals
Complication	Secondary	Patients
Further Complication	Tertiary	Old patients

32. C. Secondary

School health program we are screening for disease in children so it is secondary

33. B. Primary

Desks improve the sitting posture in children & also maintain proper distance with the note books while reading so it is a method of health promotion and since the risk factor of siting is present so it is primary.

34. C. Secondary

Monitoring of BP most commonly done in hypertensives so it is secondary.

35. A. 1 and 4

Option 2 & 3 are secondary modes of prevention (screening of disease for early diagnosis & treatment).

Epidemiology – Questions

PART 1 (GENERAL EPIDEMIOLOGY)
INTRODUCTION

36. All of the following are true about 'Evidence-based medicine' except:

a. Aims to apply best available evidence gained from scientific method to clinical decision making
b. Research paper is investigated by the tools quoted in research paper itself to check validity
c. Opinions of medical professionals & researchers have been given least importance
d. Evidence is generated from weak & poor studies

37. Hypothesis is a:

a. Axiom
b. Verified variable
c. Established document
d. Variable to be tested

38. The extent to which a specific health care treatment service procedure program or other intervention does what it is intended to do when used in a community dwelling population is termed its :

a. Efficacy
b. Effectiveness
c. Effect modification
d. Efficiency

39. Discovery of cholera by John Snow was a:

a. Cohort study
b. Cross sectional study
c. Natural experiment study
d. Clinical trial

40. Hypothesis is not tested by:

a. Descriptive studies
b. Analytical studies
c. Case control
d. Cohort studies

41. KAP study were first used in India for:

a. HIV
b. Malaria
c. Family planning
d. Ca Cervix

42. In the context of epidemiology - a set of questions is constructed in such a manner that it takes into account all the important epidemiological factors of a given disease :

a. Health model
b. Epidemiological triad
c. Epidemiological surveillance
d. Mathematical model

43. Secular trend is best demonstrated by

a. Line diagram
b. Bar graph
c. Stem- leaf plot
d. Box and whisker plots

44. Epidemiological triad are all except:

a. Host
b. Environment
c. Agent
d. Investigator

45. ICD- 11 stands for:

a. International Classification of drugs, 11th revision
b. International Classification of Disabilities, 11Th revision
c. International Classification of Diseases, 11th revision
d. International Classification if Disasters, 11Th Revision

46. Tip of iceberg phenomenon is mostly appropriately represented by :

a. Malaria
b. Measles
c. PEM
d. Rabies

47. Intraspecies competition is the competition among:

a. Species
b. Individuals of a population
c. Individuals of a community
d. Populations and their regulatory factors

36. d	37. d	38. b	39. c	40. a	41. c	42. c	43. a	44. d	45. c
46. c	47. b								

MORTALITY INDICATORS

48. All are true for Standardized Mortality ratio (SMR) except:

a. Is a form of direct standardization
b. Is calculated as Observed deaths/ Expected deaths x 100
c. Permits adjustment for age
d. Can be sued for disease as event of occurrence

49. About direct standardization all are true except:

a. Age specific death rate is not needed
b. A standard population is needed
c. Population should be comparable
d. Two populations are compared

50. The rate adjusted to allow for the age distribution of the population is:

a. Peri-natal mortality rate
b. Crude mortality rate
c. Fertility rate
d. Age- standardized mortality rate

51. Which is best in order to make a comparison between 2 populations?

a. Standardized mortality rate
b. Disease specific death rate
c. Proportional mortality rate
d. Age specific death rate

52. All the statements are true about standardization except:

a. Standardization allows comparison to be made between 2 different populations
b. National population is always taken as the standard population
c. For direct Standardization, age specific rates of study population are applied to that of standard population
d. For Indirect Standardization age specific rates of standard population are applied to study population

53. At what point in time is the population assessed for calculation of the crude death rate?

a. 1st Jan
b. 1st May
c. 1st July
d. 31st Dec

54. All are indicators of mortality except:

a. Case fatality rate
b. Life expectancy
c. Duration of sickness
d. Standardized death rate

55. Following can be used as a yardstick for the assessment of standards of therapy:

a. Specific death rate
b. Case fatality rate
c. Proportional mortality rate
d. Survival rate

56. In an outbreak of cholera in a village of 200 population 20 cases have occurred and 5 have died. Case fatality rate is

a. 1%
b. 0.25%
c. 5%
d. 25%

57. Which one of the following is a better indicator of the severity of an acute disease?

a. Cause specific death rate
b. Case fatality rate
c. Standardized mortality ratio
d. Five year survival rate

58. Which one is not true of case fatality rate?

a. It is a proportion
b. Time interval is non-specified
c. It may vary from the same disease in different epidemics
d. It is useful in chronic diseases

59. The usefulness for "Case Fatality Rate" is very limited in:

a. Sub-acute illness
b. Acute illness
c. Chronic illness
d. All of the above

60. Case fatality rate is:

a. Spreading power of a disease
b. Killing power of a disease in a time
c. Killing power of a disease with no time interval
d. Resistance of disease

48. a	49. a	50. d	51. d	52. b	53. c	54. c	55. d	56. d	57. b
58. d	59. c	60. c							

61. Estimating the burden of particular disease in a community is measured by:

a. Proportional mortality rate
b. Disease specific mortality
c. Crude death rate
d. Incidence of disease

62. Proportional mortality rate is:

a. Rate b. Ratio
c. Proportion d. None

63. Denominator for calculating proportional mortality rate from a specific disease is

a. Mid year population during that year
b. Population at risk in that particular area
c. Total deaths in that year
d. Attributable deaths of a particular disease

64. Age specific death rate can be used for all of the following except

a. Identify specific age groups at risk for preventive action
b. Comparison for different causes within same population
c. Comparison between different sexes in relation to injuries and accidents
d. Comparison between different age groups in relation to injuries and accidents

65. True statement regarding specific death rates:

a. Specific for age and sex
b. Identify particular group or group "at risk for preventive action"
c. Maybe cause or disease specific
d. All of the following

MORBIDITY INDICATORS

66. Which of the following statement is not true about incidence?

a. Incidence decreases when a programme is effective
b. Incidence implies number of new cases detected over a fixed time
c. Vaccination strategies decreases the incidence of a disease
d. Newer and effective treatment modalities decrease the incidence

67. If a new effective treatment is initiated and all other factors remain the same; which of the following is most likely to happen:

a. Incidence will not change
b. Prevalence will not change
c. Neither will change
d. Incidence and prevalence will change

68. A diagnostic test has been introduced that will detect a certain disease 1 yrs earlier than it is usually detected. Which of the following is most likely to happen to the disease within the 10 yrs after the test its introduced? (Assumed that early detection has no effect on the natural history of the disease. Also assume that no changes in death certification practices occur during the 10yrs.):

a. The period prevalence rate will decrease
b. The apparent 5 yr survival rate will increase
c. The age adjusted mortality rate will decrease
d. The incidence rate will decrease

69. If the prevalence is very low as compared to the incidence for a disease, it implies:

a. Disease is very fatal and / or easily curable
b. Disease is non-fatal
c. Calculation of prevalence & incidence is wrong
d. Nothing can be said, as they are independent

70. Prevalence of a disease all are true except:

a. Is the best measure of disease burden in etiological studies
b. Can only be determined by a cohort study
c. Is the number of new cases in a defined population
d. Describes the balance between incidence, mortality and recovery

61. a	62. c	63. c	64. c	65. d	66. a	67. a	68. b	69. a	70. c

71. The relationship between incidence and prevalence can be expresses as:

a. The product of incidence and mean duration of disease
b. The dividend of incidence and mean duration of disease
c. The sum of incidence and mean duration of disease
d. The difference of incidence of mean duration of disease

72. Prevalence of cataract at the one point of time can be determined by:

a. Longitudinal study
b. Cross-sectional study
c. Surveillance
d. Cohort study

73. All about incidence are false except:

a. No affected by duration
b. More than prevalence
c. Measures old and new cases
d. Used for chronic conditions

74. Incidence rate is calculated from:

a. Case- control
b. Prospective study
c. Retrospective study
d. RCT

75. The following is true about prevalence and incidence:

a. Both are rates
b. Prevalence is a rate but incidence is not
c. Incidence is a rate but prevalence is not
d. Both are not rates

76. A district has total population 10 lakhs, with under- 16 population being 30%. The prevalence of blindness is 0.8/1000 among under- 16 population. Calculate total number of blind among under- 16 population in the district

a. 240 b. 2400
c. 24000 d. 240000

77. In a town of population 5000, 500 are already myopic on January 1, 2011, Number of new myopia cases is 90 till December 31, 2011. Calculate incidence of Myopia in the town in 2011.

a. 0.018 b. 0.02
c. 0.05 d. 18

78. In population of 5000 number of new cases of TB is 500 old cases in the same population are 150. What is the prevalence of TB?

a. 9% b. 12%
c. 13% d. 18%

79. When the prevalence rate is used without any qualification it is taken to mean as

a. Point prevalence
b. Period prevalence rate
c. Annual prevalence rate
d. Mean duration prevalence rate

80. A drug which reduces mortality but does not cure a disease will gradually lead to

a. Incidence and prevalence both increase
b. Incidence and prevalence both decrease
c. Incidence increase, prevalence decrease
d. Incidence same, prevalence increases

81. High prevalence associated with:

a. High Cure rate
b. Immigration of healthy people
c. Longer duration of disease
d. Less Incidence of disease

82. Incidence of a disease in a population of 30,000 and 300 new cases is:

a. 0.1 per 1000 b. 10 per 1000
c. 100 per 1000 d. 1 per 100

83. All of the following are true regarding the 'Ratio' except:

a. Numerator is component of denominator
b. Numerator is not a component of denominator
c. Numerator & denominator are not related values
d. It is expressed as a number

71. a	72. b	73. a	74. b	75. c	76. a	77. b	78. c	79. a	80. d
81. c	82. b	83. a							

84. True about prevalence:

a. It is a ratio
b. Prevalence rate is the ideal measure for studying disease aetiology or causation
c. Increases with increase in duration of disease
d. Decreases with increase in case fatality

RELIABILITY & VALIDITY

85. LJ chart is used for :

a. Accuracy b. Precision
c. Odds d. Likelihood ratio

86. If a biochemical test gives the same reading for a sample on repeated testing it is inferred that the measurement is :

a. Precise b. Accurate
c. Specific d. Sensitive

87. A test which produce similar result when repeated but values obtained are not close to actual/true value .

a. Precise but inaccurate
b. Precise and accurate
c. Imprecise and accurate
d. Imprecise and inaccurate

88. Validity of a test is based upon all except:

a. Sensitivity b. Specificity
c. Precision d. Accuracy

89. Blood pressure (BP) of Mr Ram is 120/80 mm Hg. 4 different sphygmomanometers (I,II,III,IV) are used to measure his BP with 3 readings each. Based on their readings match the sphygmomanometers with their respective accuracy and precision parameters:

	Reading of sphygmomanometers		Parameters
A	120/ 80 120/80 120/80	I	Precise but inaccurate
B	140/96 108/62 96/82	II	Imprecise & Accurate
C	140/96, 140/96 140/96	III	Precise & Accurate
D	122/82 120/80 118/78	IV	Imprecise & Inaccurate

a. A- II , B- IV, C - I D, III
b. A- II B-II C- IV D-II
c. A- IV, B-B-III C-II D-I
d. A-III , B -IV C-I D-II

90. A new method of measuring haemoglobin levels has been developed . Ten successive readings of a single sample are as following 9.4, 10.4, 9.6, 9.1, 10.8, 12.1, 10.1 9.8, 9.2, 9.5 but the haemoglobin measured by standard calorimetry was 10.2 therefore the given method has :

a. Low validity low reliability
b. Low validity high reliability
c. High validity low reliability
d. High validity high reliability

BIAS

91. All of the following help reduce bias except:

a. Blinding b. Randomization
c. Confounder d. Matching

92. The systematic distortion of retrospective studies that can be eliminated by a prospective design is:

a. Confounding
b. Effect modification
c. Recall bias
d. Measurement bias

93. Which of the following is not a cause of bias?

a. Confounding
b. Selection
c. Misclassification
d. Random error

94. True about confounding factor

a. It is found equally between the study and the controls groups
b. It is itself a risk factor for the disease
c. Confounding can be eliminated by selecting a small group
d. It is associated either with the exposure or the disease

84. c	85. b	86. a	87. a	88. c	89. d	90. c	91. c	92. c	93. d
94. b									

95. A study revealed that in a study group, intake of beta carotene decreases carcinoma of colon but it actually may be due to increased intake of dietary fibre. This is due to:

a. Confounding factor
b. Misclassification bias
c. Selection bias
d. Sampling error

96. Confounding can be removed by:

a. Assign confounders equally to both cases and controls
b. Stratification
c. Matching
d. All of the above

97. A study has been done to establish relationship between smoking and lung cancer, it was found that association was more in people who exercise less and less in people who exercise more. In this situation exercise is a

a. Bias
b. Effect modifier
c. Confounding factor
d. Collinear factor

98. Researcher wants to study the blood level of lipids among people who smoke and those who do not but he is now concerned that the smokers might differ from non smokers in there diet exercise etc as well. This concern is known as

a. Recall bias
b. Information bias
c. Hawthorne bias
d. Selection bias

99. Berkesonian bias is a type of:

a. Selection bias
b. Interviewer bias
c. Information bias
d. Recall bias

100. Berkesonian bias is due to:

a. Presence of confounding factors in both cases and controls
b. Questioning the cases more thoroughly ac compared to controls
c. Different rates of admission to hospital due to different diseases
d. Better recall by the cases as compared to controls

PART II
STUDY DESIGNS
DESCRPTIVE STUDIES

101. The analytical study where population is the unit of study is:

a. Cross sectional
b. Ecological
c. Case-control
d. Cohort

102. Studying distribution of disease or characteristics in human population & identifying the characteristics with which disease seem to associated is:

a. Descriptive epidemiology
b. Experimental epidemiology
c. Analytical epidemiology
d. Ecological epidemiology

103. The ratio between the incidence of disease among exposed and non-exposed is called:

a. Causal risk
b. Relative risk
c. Attributable risk
d. Odds ratio

104. Hawthorne effect is seen in:

a. Case- control study
b. Cohort study
c. Cross- sectional study
d. Retrospective cohort study

105. A study compared 150 children with a particular disease with 300 disease free children to examine past experiences that may contribute to the development of the illness. What kind of study is this?

a. Cohort
b. Controlled clinical trial
c. Case series
d. case control

95. a	96. d	97. b	98. d	99. a	100. c	101. b	102. a	103. b	104. b
105. c									

106. Best study of first choice for assessment of UNKNOWN or New disease with no etiological hypothesis?

a. Cohort study
b. Case control study
c. Cross-sectional study
d. Descriptive epidemiology

107. 20 pregnant women were asked about the history of smoking when they came for regular antenatal visit and then followed up to see how many of them had low birth weight babies. What is the type of study?

a. Case control
b. Prospective cohort
c. Cross sectional
d. Ecological

108. A cohort study on 7000 subjects who were smokers over a ten- year period was done & 70 subjects developed lung cancer, concurrent evaluation of general population in catchment area of hospital, out of 7000 non- smoker subjects only 7 developed lung cancer. The RR for developing lung cancer is :

a. 1 b. 10
c. 100 d. 0.1

109. In an investigation to study the effect of smoking on renal cell cancer, it is observed that 30 of the 50 patients were smokers as compared to 10 out of 50 control subjects. The odd ratio of renal cancer associated with smoking will be:

a. 3.0 b. 0.33
c. 6.0 d. 0.16

110. Matching is done for removal of :

a. Bias
b. Known confounding
c. Unknown confounding
d. Known confounding + Unknown confounding

111. In a study of 200 smokers & 300 non-smokers were followed up over a period of 10 yrs to find out incidence of hypertension. Out of 200 smokers, 60 developed hypertension, as compared to non-smokers in whom 30 developed hypertension. The relative risk of the study:

a. 3 b. 30
c. 1/3 d. 6

112. The physical examination records of the entire incoming freshman class of 1935 at the University of Minnesota were examined in 1977 to see if their recorded height and weight at the time of admission to university was related to their chance of developing CHD. This is an example of.

a. Cross sectional study
b. Concurrent cohort
c. Retrospective cohort
d. Clinical trial

113. Retrospective cohort studies are characterized by all the following except ?

a. The study groups are exposed and non- exposed
b. Incidence rates are compared
c. Required sample size is smaller than that needed for a concurrent cohort study
d. The required sample size is similar to that needed for a concurrent cohort study

114. Migration study is used for

a. Socio demographic reasons for migration of a population
b. Prevalence of a disease in a population
c. Environmental and genetic factor in a disease in a population
d. Disease with a long incubation period

115. All the following are advantages of case control studies except:

a. Useful in rare diseases
b. Relative risk can be calculated
c. Odds ratio can be calculated
d. Cost- effective and inexpensive

116. A one-day census of inpatients in a mental hospital could:

a. Give good information about the patients in that hospital at that time
b. Give reliable estimates of seasonal factors in admissions
c. Enable us to draw conclusions about the mental hospitals of India
d. Enable us to estimate the distribution of different diagnosis in mental illness in the local area

106. d	107. b	108. b	109. c	110. b	111. a	112. c	113. c	114. c	115. b
116. a									

117. Incidence of carcinoma cervix in women with multiple sexual partners is 5 times incidence seen in those with a single partner. Based on this, what is the attributable risk?

a. 20% b. 40%
c. 50% d. 80%

118. In a study 400 smokers and 600 smokers were followed up over a period of 10 years to find out the incidence of hypertension. The following table summarizes the data at the end of the study:

Hypertension				
		Yes	No	Total
Smoking	Yes	120	280	400
	No	30	570	600
	Total	150	850	1000

The Risk ratio in this study is:

a. 0.06 b. 0.60
c. 6.0 d. 60.0

119. Several studies have shown that 85% of cases of lung cancer are due to smoking. It is a measure of :

a. Incidence rate
b. Relative risk
c. Attributable risk
d. Population attributable risk

120. It is probable that physician have a higher index of suspicion for TB in children without BCG scar than those with BCG scar. This is so & an association is found between TB & not having BCG scar, the association may be due to :

a. Selection bias
b. Interviewer bias
c. Surveillance bias
d. Non- response bias

121. To investigate effect of tobacco chewed on oral cancer, its observed that 30 out of 50 patients were tobacco chewers as compared to 10 tobacco chewers out of 50 control subjects. The odds ratio of oral cancer associated with smoking will be:

a. 6.0
b. 60
c. 3.0
d. Insufficient data given for calculation

122. Framingham Heart Study is an example of :

a. Case Control study
b. Cohort study
c. Cross- Sectional Study
d. Interventional study

123. Which of the following statements is not correct?

a. A cohort study is more expensive in comparison to case control study
b. A cohort study starts with people exposed to risk factor or suspected cause while case control study starts with disease
c. A long follow- up period often needed with delayed results in a cohort study whereas a case control study yields relatively quick results
d. A cohort study is more appropriate when the disease or exposure under investigation is rare, in comparison to case control study

124. For a community physician which of the following is more important?

a. Relative risk
b. Odds ratio
c. Attributable risk
d. Prevalence of the disease

125. Which of following research methods studies have only people who are initially free of disease of interest?

a. Case control study
b. Case series study
c. Prevalence survey
d. Cohort study

126. False about Odds Ratio is:

a. It is always positive
b. It can be 0.3
c. It can be 3.0
d. It is always >1

117. d	118. c	119. c	120. b	121. a	122. a	123. d	124. c	125. d	126. d

127. An Odds ratio=1 indicates that the association between the two factors is:

a. Is Perfect
b. Is low
c. Is high
d. Does not exist

128. Which of the following bias can be reduced by allowing equal interview time?

a. Berkesonian bias
b. Recall bias
c. Selection bias
d. Interviewer bias

129. Which of the following is ideal to ensure similarity between experimental & control groups?

a. Randomization
b. Matching
c. Stratified randomization
d. Cross over study

130. A study was carried out to find out safety of OCPs. Relative risk (or Odds ratio) of Thromboembolism among OCP users to non users in the given case control study is :

	NO.	% OCP USERS
Cases of thromboembolism	84	50
Controls	168	14

a. 0.14
b. 6
c. 1
d. Insufficient data to calculate

131. Incidence rate of lung cancer among smokers is 10 per 1000 and among Non- smokers is 1 per 1000. The extent to which lung cancer can be attributed to smoking is :

a. 10%
b. 90%
c. 1%
d. 100%

132. Descriptive epidemiology includes all except:

a. Retrospective & prospective study
b. Disease
c. Time
d. Place

133. Match the following:

Type of study	Unit of Study
a. Cohort Study	i. Healthy Volunteers
b. Ecological study	ii. Population
c. RCT	iii. Individual
d. Field trials	iv. Patients

a. a-i, b-iii, c-iv, d-ii
b. a-iii, b-ii, c-iv, d-i
c. a-iii, b-ii, c-I, d-iv
d. a-i, b-iii, c-ii, d-iv

134. In a case-control study of a suspected association between breast cancer & contraceptive pill, all of following are true statement except:

a. The control should come from a population that has the same potential for breast cancer as the cases
b. The control should exclude women known to be taking the pill at the time of the survey
c. All the controls need not to be healthy but should not suffer from breast carcinoma
d. The attributable risk of breast cancer resulting from the pill may be directly measured

135. Which of the following statements is not true about "cohort study"?

a. Provides incidence of disease
b. Indicated when there is good evidence of association between exposure and disease
c. Done when incidence of disease is very low among exposed
d. Done when ample funds are available

136. The association between coronary artery disease (CAD) and smoking was found to be as follows:

	CAD	No CAD
Smokers	30	20
Non smokers	20	30

The Odds ratio can be estimated as:
a. 0.65
b. 0.8
c. 1.3
d. 2.25

127. d	128. d	129. a	130. b	131. b	132. a	133. b	134. d	135. c	136. d

137. Relative risk of a disease measures the

a. Strength of association between suspected cause and effect
d. Biological plausibility between suspected cause and effect
c. Temporal relationship between suspected cause and effect
d. Specificity of association between suspected cause and effect

138. The association between low birth weight and maternal smoking during pregnancy can be studied by obtaining smoking histories of women at the time of their visit and then subsequently following up with birth weight. What type of study is this?

a. Clinical trial b. Cross Sectional
c. Prospective d. Case- Control

139. False about RCTs is:

a. Results of attrition are included in the analysis
b. Randomization is done while selecting subjects for study
c. Double blinding is most common form of blinding observed
d. Cross – over design helps removing ethical concerns

140. Nested case control study is at type of

a. Retrospective study
b. Prospective study
c. Descriptive study
d. Cross- sectional study

141. Which of following statements is false about nested case control study?

a. Is a cohort study nested in a case control study
b. It maintains temporal association
c. Is useful for rare disease with expensive diagnostic tests
d. Recall bias is not seen

142. A total of 5000 patients of glaucoma are identified and surveyed by patient interviews regarding family history of glaucoma. Such a study design is called :

a. Case series report
b. Case control study
c. Clinical trial
d. Cohort study

143. Attributable risk means:

a. Fatality of a disease
b. Disease risk ratio between exposed and non- exposed
c. Risk difference between exposed and non-exposed
d. Communicability of a disease

144. Which of the following is true about cohort study?

a. Disease to risk factor study
b. Effect to cause study
c. Not associated with attributable risk
d. Associated with antecedent causation

145. Recall bias is most commonly associated with

a. Case control study
b. Cohort study
c. Randomized controlled trial
d. Cross-Sectional study

146. A person wants to study a disease 'X' and fat consumption. He collected data for a number of people affected with 'X' from the government hospital and details of fat consumption from food industry. This type of study is known as:

a. Experimental study
b. Ecological study
c. Pesiological study
d. Cross – Sectional study

147. Case control study is used for study of:

a. Common diseases
b. Unknown diseases
c. Rare diseases
d. All of these

148. In a UK study, it was found that there were more deaths from Asthma than the sale of Anti- Asthma drugs. This is an example of

a. Cohort study
b. Case reference study
c. Ecological study
d. Experimental study

137. a	138. c	139. b	140. b	141. a	142. a	143. c	144. d	145. a	146. b
147. c	148. c								

149. Which of the following is not a true difference between Case control and Cohort study?

a. Case Control study requires more time than cohort study
b. Cohorts are chosen based on exposure in a cohort study
c. Cohort study is generally prospective in direction
d. Case control study must be used for rare diseases

150. Case- control study is a type of:

a. Descriptive epidemiological study
b. Analytical study
c. Longitudinal study
d. Experimental study

151. As compared to a routine case control study nested case control study avoids problems (in study design) related to:

a. Temporal association
b. Confounding bias
c. Need for along follow up
d. Randomization

152. Cross sectional study is:

a. Longitudinal study
b. Prospective study
c. Retrospective study
d. Prevalence study

153. True about case control study is :

a. Not possible for rare disease
b. Odds ratio cannot be calculated
c. Attributable risk cannot be calculated
d. Bias is not seen

154. Most appropriate method to know about contribution of risk factors to disease:

a. Relative risk b. Attributable risk
c. Absolute risk d. Odds ratio

155. What is not true about cross sectional study?

a. Also called prevalence study
b. Tells aetiology
c. Shows pattern of disease
d. Snapshot of a population

156. Attribute risk gives a better idea of:

a. Strength of association between cause and effect
b. Impact of successful preventive health programme
c. Assessing etiological role or factor in disease
d. Potential public health importance of disease

157. Healthy worker effect is bias of which type?

a. Selection bias
b. Recall bias
c. Confounding bias
d. Berkesonian bias

158. True about cross-sectional study is

a. Suitable for study of rare diseases
b. Chronic diseases can be studied
c. Involves few numbers of subjects
d. Most inexpensive study

159. Bias due to inter- observer variation is:

a. Selection bias
b. Sampling bias
c. Observation bias
d. Recall bias

160. Hospital based study among following is:

a. Cohort
b. Case control study
c. Cross sectional
d. Ecological study

161. Cohort study is:

a. Needs few patients
b. Incidence can be calculated
c. Proceeds from effect to cause
d. Odd ratio can be calculated

162. Study of alcohol intake for 10 year and occurring of hepatic disease type of study is:

a. Cohort b. Case control
c. Random d. Cross sectional

163. Matching is done to remove:

a. Confounding factors
b. Selection bias
c. Observation bias
d. Sampling error

149. a	150. b	151. a	152. d	153. c	154. b	155. b	156. d	157. a	158. b
159. c	160. b	161. b	162. a	163. a					

164. Case control study estimate:

a. Only odd's ratio
b. Odd's ratio and attributable risk
c. Relative risk, attributable risk, population attributable risk
d. Incidence, Relative risk, and attributable risk

165. Which of these is the best study design to assess in quickest time the association between smoking and lung cancer?

a. Case control study
b. Cohort study
c. Cross sectional study
d. Randomized controlled trial

INTERVENTION STUDIES

166. In a double blind clinical drug trial:

a. Each patient receives a placebo
b. Each patient receives both (double) treatments.
c. The patients do not know which treatment they are receiving
d. The patients do not know that they are in a drug trial

167. All the following are true in a randomized control trial (RCT) except :-

a. Baseline characteristics of intervention are similar in both arms
b. Investigator's bias is minimized by double blinding
c. The sample size required depends on the hypothesis
d. The dropouts from the trial should be excluded from the analysis

168. What is the purpose of a control group in an experimental study?

a. Its permit an ethical alternative for patients who do not wish to be subjected to an experimental treatment.
b. It allows larger numbers of patients to be used, thus increasing the power of the statistical techniques used
c. It helps to eliminate alternative explanations for the results of the study
d. It reduces the likelihood of making a type II error in hypothesis testing

169. What is the purpose of randomization in a clinical trial?

a. To equalize the effects of extraneous variables, thus guarding against bias
b. To allow inferential statistics to be used
c. To guard against placebo effects
d. To guard against ethical problems

170. A pharmaceutical company develops a new antihypertensive drug. Samples of 24 hypertensive patients, randomly selected from a large population of hypertensive people, are randomly divided into 2 groups of 12. One group is given the new drug over a period of 1 month; the other group is given a placebo according to the same schedule. Neither the patients nor the treating physicians are aware of which patients are in which group. At the end of the month, measurements are made of the patient's blood pressures. This study:

a. Is a RCT
b. Uses a crossover design
c. Is a single blind experiment
d. Is a prospective study

171. Intention- to- treat analysis is done in

a. Cohort study
b. Survival analysis studies
c. Randomized control trials
d. Multiple time series studies

172. The major purpose of random assignment in a clinical trial is to :

a. Help ensure that study subjects are representative of the general population
b. Facilitate double blinding
c. Facilitate measurement of outcome variables
d. Ensure that the study groups are comparable on base line characteristics

164. a	165. a	166. c	167. d	168. c	169. a	170. a	171. c	172. d

173. Which one of the following statements regarding pre post clinical trial is most appropriate?

a. They cannot be randomized
b. They are useful in studies involving mortality
c. They use the patient as his or her own control
d. They are usually easier to interpret than the comparable parallel clinical trial

174. All of the following are Experimental/ Interventional studies except:

a. Randomized control trials
b. Field trials
c. Community trials
d. Ecological studies

175. Which is true about experimental trials?

a. Can't double blind in animal trials
b. All animal trials are unethical
c. Can't do interim analysis
d. Are always prospective

176. Selection bias can be eliminated by:

a. Randomization
b. Single blinding
c. Double blinding
d. Matching

177. Double blind study means:

a. Observer is blind about the study
b. Person or groups being observed is blind about the study
c. Both observer and person or group being observed is blind about the study
d. Interpreters and analyser are blind about the study

META ANALYSIS & SYSTEMATIC REVIEW

178. All are true regarding meta-analysis except:

a. Statistical technique for combing finding from several independent studies on special topic
b. Its purpose is not to identify risk factors
c. Its purpose is to increase statistical power by increasing sample size
d. Validity doesn't depend on quality of systemic review

179. Not a feature of systematic review?

a. Meta-analysis always performed
b. Search for literature is compulsory using explicit search strategy
c. Critical appraisal is always criterion based
d. Research question always focused

MISCELLANEOUS

180. An advertisement in a medical journal stated that 2000 subjects with sore throat were treated with our new medicine. With in 4 days, 94 % were asymptomatic. The advertisement claims that the medicine was effective. Based on the evidence given above, the claim:

a. Is correct
b. May be incorrect as the conclusion is not based on a rate
c. May be incorrect because of failure to recognize a long – term cohort effect
d. Incorrect because as no control or comparison group was involved

181. Of different epidemiological study designs available to test association between risk factor and disease best design is of:

a. Case control study
b. Ecological study
c. Cohort study
d. Cross sectional study

182. In establishing causal association, most essential criterion is:

a. Consistency of relationship
b. Temporal relationship
c. Duration of relationship
d. Strength of relationship

183. Suspected cause preceding the observed effect is an example for :

a. Coherence
b. Temporality
c. Biological plausibility
d. Specificity

173. c	174. d	175. d	176. a	177. c	178. d	179. a	180. d	181. c	182. b
183. b									

184. Association of high altitude areas with goitre is example of :

a. Causal association
b. Direct association
c. Temporal association
d. Indirect association

185. Association can be measured by all except:

a. Relative risk
b. Cronbach's alpha
c. P value
d. Odds ratio

184. d | 185. b

Epidemiology – Explanations

PART 1
(GENERAL EPIDEMIOLOGY)
INTRODUCTION

36. D. Evidence is generated from weak & poor studies

Evidence Based Medicine:

- Def: Applying best available evidence gained from scientific method to clinical decision making (clinical expertise & patient values)
- **Seeks to assess the quality of clinical practise objectively (no subjectivity)**
- **Imp: Gold standard for clinical practise**
- Father: David Sackett
- Highest importance: Meta- analysis*> Double blinded clinical trial in a homogeneous population
- Statistical parameters used:
  - LR
  - ROC

37. D. Variable to be tested

Hypothesis testing is the basic essence of any research and hypothesis means research question/ a variable to be tested. Null hypothesis means both are same whereas alternate hypothesis means two are not same.

38. B. Effectiveness

- **Efficacy**: is the effect or usefullness of an agent/ under ideal controlled laboratory conditions
- **Effectiveness:** is the effect or usefullness of an agent/ under real life conditions
- **Efficiency:** Measure of relationship between results achieved & effort expended in terms of money, resources & time

39. C. Natural experiment study

Natural experiment is a non-randomised clinical trial which John Snow had used to discover that Cholera was reason of outbreak due to difference of water supplies in different villages in Britain

40. A. Descriptive studies

Hypothesis is tested by analytical studies which includes case control and cohort

41. C. Family planning

KAP stands for knowledge, attitude & practise which was used first for family planning

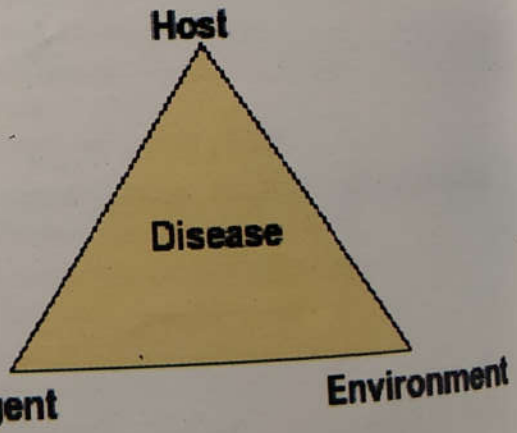
42. C. Epidemiological surveillance

Surveillance means ongoing systematic collection (using a questionnaire), analysis & interpretation of data and use of this information to take action for prevention and control of disease

43. A. Line diagram

Line diagram provides the trends of disease

44. D. Investigator



45. C. International Classification of Diseases, 11th revision

- Revised every 10 years

ICD 11	ICD 10
55000 codes	14400 codes
Electronic	Not electronic

27 chapters	22 chapters
31 countries took part	
1673 Participants	

46. C. PEM

Measles & rabies don't show latent phases at all so no iceberg phenomenon. Out of A & C; C is best answer as majority of the cases are not known in case of PEM

47. B. Individuals of a population

Inter species means comparison in different species & intra means comparison in same species

MORTALITY INDICATORS

48. A. Is a form of direct standardization

SMR/ standardized Mortality Ratios:

- Observed deaths per year/ Expected deaths per year * 100
- Conclusion:
- SMR = 100: no increased death due to occupation
- SMR > 100: more death due to occupation
- Calculated from indirect standardization

49. A. Age specific death rate is not needed

	Direct	Indirect
ASDR	Uses actual ASDRs	Uses standard ASDRs
Age structure	On standard age structure	On actual age structure
In each age group No. of deaths Population	Both available	Both unavailable

50. D. Age- standardized mortality rate

Standardization:

- Standardized Population: Population where numbers in each age & sex group are known
- Used commonly in occupational studies
- Standardization removes confounding effect of different age structures (Age standardized death rate is best to compare vital statistics of countries)
- Types of standardization
- Direct:
- Indirect: used when no. of deaths for each age- specific stratum are not available

51. D. Age specific death rate

Same population then specific death rates; different population then it standardized death rates

52. B. National population is always taken as the standard population

National population can't be taken as the standard population always as not even in India we can't refer the census data as a standardized population as a lot of data is missed. Standard population means population where numbers in each age & sex group are known

53. C. 1st July

Mid-year population is calculated on the 01st July of every year

54. C. Duration of sickness

Duration of sickness is a morbidity indicator; life expectancy is a positive mortality indicator

55. D. Survival rate

Survival Rates:

- Cancer studies
  - Describes prognosis
  - Yardstick for assessment of standards of therapy
- SR = Total No. of Patients alive after 5 years * 100

Total No. of Patients diagnosed/ Treated

- Studied using Kaplan Meir/ product limit estimator
  - Comparison done by cox proportional hazard risk function
  - Non parametric estimation

56. D. 25%

$$CFR = \frac{\text{Number of deaths due to a particular disease}}{\text{Number of cases due to same disease}} \times 100$$

57. B. Case fatality rate

Case fatality rate:

- Killing power/ severity of a disease/ Related to virulence of organism
  - Can be used to measure benefits of new therapy i.e, any therapy which prevents mortality will reduce case fatality
- Name is a rate but actually a proportion
- Complement of survival rate
  - CFR = 1 – survival rate
- Disadvantages:
  - Time interval is not specified
  - Useful only for acute diseases

58. D. It is useful in chronic diseases

As time is not specified so it is a proportion. Depending upon the strain of the organism the CFR may vary in different epidemics (Zaire variant of ebola virus it is 90% whereas in other strains it is just 30%)

59. C. Chronic illness

CFR has no role to play in chronic diseases

60. C. Killing power of a disease with no time interval

As case fatality rate has no time component so answer C > B

61. A. Proportional mortality rate

Best Indicator of disease burden	Indicator
Mortality indicator	Proportional mortality rate
Morbidity indicator	Prevalence
Health index	HALE > DALY

62. C. Proportion

It has no time component so it is a proportion (misnomer)

63. C. Total deaths in that year

Proportional Mortality Rate:

- Deaths due to a specific cause/ disease/ age/ sex/ ..... Per 100/ per 1000 total deaths
- Advantage.
  - Simplest measure of estimating disease burden
  - Indicates magnitude of preventable mortality
  - Used when population is not known

64. C. Comparison between different sexes in relation to injuries and accidents

As the question mentions age specific, it can never provide data for sex specific

65. D. All of the following

Specific Death Rate:

- Cause/ disease/ age/ sex/ ..... Specific divided by mid year population
- Helps in identifying "AT RISK group"
- Helps in comparison between different causes within the same population
  - If 2 populations then answer would be standardization

MORBIDITY INDICATORS

66. A. Incidence decreases when a programme is effective

Incidence	Prevalence
Rate	Proportion (WRONG IN PARK)
New cases	New + Old cases (case load)
No. of **new** cases of a disease in a year/ total population at risk in a given time	**Total** No. of cases of a disease in a year/ **total population** at in a given time
For prevention & control of disease	**Administrative & planning purposes**
Cohort study	Cross sectional study

67. A. Incidence will not change

Treatment will reduce the prevalence but not the incidence

68. B. The apparent 5 yr survival rate will increase

As there is no actual change in natural history of disease so A, C, & D won't be seen (rather they will falsely increase as there is a false increase in survival by one year). The 5 year apparent survival time will falsely seem to be increased; but there will be no change in actual survival

69. A. Disease is very fatal and / or easily curable

Prevalence = Incidence * Duration

So, if the prevalence is less as compared to the disease then it means the duration is less which is possible only if the disease is too fatal or it is easily cured

70. C. Is the number of new cases in a defined population

Prevalence refers to number of new plus old cases whereas incidence means number of new cases only

71. A. The product of incidence and mean duration of disease

Prevalence = Incidence * Duration

72. B. Cross-sectional study

One point of time that is point prevalence can be calculated from cross sectional studies whereas over the period of time is longitudinal studies

73. A. No affected by duration

Explanation for other options:

a. Incidence is less than prevalence

b. Measured for only new cases

c. Generally used for acute conditions

74. B. Prospective study

Incidence is calculated from cohort studies & when we refer to cohort's we always mean prospective cohorts (if PGI then answer can be both B & C)

75. C. Incidence is a rate but prevalence is not

Prevalence has no time component so it is a proportion

76. A. 240

Total number of people in under 16 population = 30% of 10 lakhs = 3 lakhs

Total number of blind in under 16 population = 0.8/ 1000 * 300000 = 240

77. B. 0.02

$$\text{Incidence} = \frac{\text{Number of New cases}}{\text{Population at Risk}} \times 1000$$

Incidence = 90/ 4500 * 1000 = 2 per 1000 which is 0.02 (depending on the option)

78. C. 13 %

$$\text{Prevalence} = \frac{\text{Total Number of Cases}}{\text{Total Population}} \times 1000$$

Prevalence = 650/ 5000 × 1000 = 13%

79. A. Point prevalence

Prevalence is of two types – point & period; if nothing is given we take it as point prevalence (calculated from cross sectional studies; where as period prevalence is calculated from longitudinal studies)

80. D. Incidence same, prevalence increases

As disease is not cured and duration is increased so prevalence is increased; whereas the incidence won't be affected at all

81. C. Longer duration of disease

Rest three options will lower the prevalence

82. B. 10 per 1000

$$\text{Incidence} = \frac{300 \times 1000}{30000} = 10 \text{ per } 1000$$

83. A. Numerator is component of denominator

- Proportion:
  - Numerator is a part of denominator
  - Multiplied by 100 (as always expressed in %): not always true as prevalence, is a proportion but multiplied by 1000
  - Public Health importance: what fraction of the population is affected
- Rate:
  - Proportion with time component included
  - Multiplied by 1000 or more
  - Public health importance: how fast the cases were identified
- Ratio
  - Sex ratio (best example)
  - Numerator is not a part of denominator

84. C. Increases with increase in duration of disease

Explanation for other options:

a. It is a proportion

b. Ideal for measuring to measure disease burden

c. TRUE

d. Not always correct as if the case fatality occurs after many years; the prevalence is already more

RELIABILITY & VALIDITY

85. B. Precision

Reliability/ repeatability/ precision/ consistency	Validity/ Accuracy/ efficiency
Quality of being sharply defined through exact detail repeatedly	Degree to which a measurement Represents true value of the attribute that is being measured
Tests used – Range/ R chart, Levy-Jennings chart (LJ chart)	Tests used – Mean chart, Shewhart control chart

86. A. Precise

This refers to reliability whose other name is precision

87. A. Precise but inaccurate

Repeated values refers to precision whereas as the values are not close to each other it means it is inaccurate

88. C. Precision

The other name of reliability is precision so it is the wrong option here

89. D. A-III , B -IV C-I D-II

Reliability/ repeatability/ precision/ consistency	Validity/ Accuracy/ efficiency
Repeated results	**True value**

90. C. High validity low reliability

How to approach such questions?

- Validity:
  - Calculate the mean (central tendency)
  - If the mean calculated is not clinically different from the given mean it will refer to high validity
  - If the mean calculated is clinically different from the given mean it will refer to low validity
- For reliability you need to see whether there are repeated readings or not
  - Almost 60 to 70% readings will lead to high reliability
- Answer to the question: High validity & low reliability

BIAS

91. C. Confounder

Confounder is itself responsible for bias

Blinding removes interviewer bias; randomization removes selection bias & matching removes known confounders & hence the bias related to it

92. C. Recall bias

Recall bias is typically seen in case control studies which is removed from prospective studies

93. D. Random error

	Random error	Systematic error/ Bias
Due to	Chance alone • Biological variation • Sampling error • Measurement error	Systematic deviation from truth
Results in	Lack of reliability	Decreased validity (internal)
Influence of Sample size	Larger sample size reduces	Not affected
Preventable largely by	Can't be prevented 100%	**Better study methodology**

94. B. It is itself a risk factor for the disease

Confounder:

Definition: situation where an association between an exposure & an outcome is entirely or partially due to another exposure

Properties:

- Found unequally distributed between study & control groups
- Has independent effect in causation of outcome (thus is a risk factor itself among the non exposed)

Confounder	Effect Modifier/ Interaction
Independent effect in causation of outcome i.e, never in causal pathway	
Any factor associated with both exposure & outcome	Any factor associated with outcome only

95. A. Confounding factor

Over here the altered results are being observed because dietary fibre is acting as a confounder. In the question there is no misclassification or selection bias

96. D. All of the above

Methods of removing confounder:

Stage	Method	Importance
Design Phase	**Randomization**	**Most ideal method**
	Restriction	Including people who have a particular disease
	Matching	Used in case control studies
Analysis Phase	Stratification	Used for larger studies
	Modelling (Multi variate analysis)	Multiple confounders

97. B. Effect modifier

As effect is different in both the groups so it is an effect modifier. If effect would have been same then it would have been a confounder.

98. D. Selection bias

As the researches wants to do the study (which means data collection has not occurred) so it is selection bias as all other biases occur during the phase of data collection

99. A. Selection bias

Berkesonian bias is a type of selection bias which is seen due to differential aspects of hospitals. Ex: In AIIMS we would see more of lung cancer stage IV due to bidi & cigarette but in Apollo we would see Lung cancer due to e cigarettes & cigars

100. C. Different rates of admission to hospital due to different diseases

Option C out of the four options would provide difference in study participants which is due to the hospital

PART II
STUDY DESIGNS
DESCRPTIVE STUDIES

101. B. Ecological

Ecological study is the only study which takes into account population as unit of study

102. A. Descriptive epidemiology

This is the definition of descriptive epidemiology

103. B. Relative risk

Relative risk=Incidence of disease in exposed a/(a+b)

Incidence of disease in non exposed c/(c+d)

104. B. Cohort study

Whenever we refer to plain cohort study it refers to prospective cohort. Hawthorne effect refers to attention seeking bias where the person who is exposed seeks repeated clinical attention

105. C. Case series

We are comparing cases with controls which are the typical feature of case control study

106. D. Descriptive epidemiology

Case report is the first study done for unknown/ new disease; & case report is a type of descriptive epidemiology

107. B. Prospective cohort

As the question means followed up which is a typical feature of cohort

108. B. 10

	Disease	Non-Disease	
Exposed	70	B	7000
Non-Exposed	7	D	7000

RR = 70/ 7000/ 7/ 7000 = 10

109. C. 6.0

	Exposed	Non-Exposed	
Cases	30	20	50
Controls	10	40	50

OR = (30 * 40)/ (20 * 10) = 6

110. B. Known confounding

Matching removes known confounders whereas randomization removes known & unknown confounders

111. A. 3

	Disease (HTN)	Non-Disease	
Exposed (Smokers)	60	B	200
Non-Exposed (Non-smokers)	30	D	300

RR = 60/ 200/ 30/ 300 = 3

112. C. Retrospective cohort

This is a record based study so it is a retrospective cohort

113. C. Required sample size is smaller than that needed for a concurrent cohort study

As for all observational studies the sample size formula is $n = 4pq/ d^2$ so whether it be a prospective or a retrospective cohort the sample size formula will be same

114. C. Environmental and genetic factor in a disease in a population

Migration study is done basically to compare whether a particular disease has an environmental aetiology or genetic one. Example: Stomach cancer is common in people of Japan so if we have a group of Japanese who have migrated to USA & still if the risk is high then it is genetic but if decreases then it is environmental because the environment of USA & Japan are different

115. B. Relative risk can be calculated

Sl. No.	Headings	Case Control	Cohort
1	Basic Concept	Compare cases with controls	Compare exposed with non- exposed
2		At start of study we have both cases and controls; we go back in time and see for exposure status	At start of study no one is exposed and or diseased; after study starts first there is exposure then disease
3	Common One Liners (NEET PG important)	Temporality absent	Temporality present
4		Retrospective study*	Prospective study
5		Least amount of resources of all study designs	Maximum amount of resources (time/ manpower/ money)
6		Calculate OR	Calculate RR, AR, PAR, Population AR, Incidence
7		Recall bias	Loss to follow up/ Attrition bias
8	Jackpot Points (AIIMS/ PGI)	Ethical issues absent	Ethical issues present
9		Multiple exposures can be studied	Multiple outcomes can be studied
10		Can be done for rare outcomes also	Always done for common outcomes

116. A. Give good information about the patients in that hospital at that time

Explanation for other options:

B – for seasonal estimates we need longer period of data across years

C – Hospital data always suffer from a peculiar pattern of patients (Berkesonian bias)

D – One day data won't provide it

117. D. 80%

Proportion Attributable Risk = $\frac{\text{Incidence in exposed} - \text{Incidence in non-exposed}}{\text{Incidence in exposed}} = \frac{5X - X}{5X} = 80\%$

118. C. 6.0

RR = Incidence in Exposed/ Incidence in Non-Exposed = 120/ 400/ 30/ 600 = 6

119. C. Attributable risk

Attributable risk refers to the extra risk due to a particular risk factor

120. B. Interviewer bias

As the interviewer has high index of suspicion it will lead to interviewer bias because he would have taken more detailed interviews of the children without BCG

121. A. 6.0

	Chewing	No chewing
Tobacco cancer	30	20
No cancer	10	40

OR = (30 * 40)/ (20 * 10) = 6

122. B. Cohort study

The Framingham Heart Study is a long-term, ongoing cardiovascular cohort study on residents of the city of Framingham, Massachusetts. The study began in 1948 with 5,209 adult subjects from Framingham, and is now on its third generation of participants. Prior to it almost nothing was known about the "epidemiology of hypertensive or arteriosclerotic cardiovascular disease". Much of the now-common knowledge concerning heart disease, such as the effects of diet, exercise, and common medications such as aspirin, is based on this longitudinal study. It is a project of the National Heart, Lung, and Blood Institute, in collaboration with (since 1971) Boston University

123. D. A cohort study is more appropriate when the disease or exposure under investigation is rare, in comparison to case control study

Rare outcome can't be studied in a cohort as it is more time consuming & costly study

124. C. Attributable risk

Indicator	Importance of Indicator
RR	Clinician
AR, PAR	Clinician + public health specialist
Population AR	Public health specialist

125. D. Cohort study

In case of cohort we always start with those who are not exposed & non disease

126. D. It is always >1

Odd's ratio can never be negative but it can be less than 1 also which refers to protective factor

127. D. Does not exist

RR/ OR	Association	Interpretation
>1	Positive	Risk factor
=1	Null	No
<1	Negative	Protective factor

128. D. Interviewer bias

Generally if the interviewer has a knowledge of any factor being more in a particular group then he/ she would devote more time to interview the patient

129. A. Randomization

Randomization removes both known & unknown confounders so it brings about similarity in both experimental & control groups

130. B. 6

In this question as percentage of users are given, we need to calculate the exposed & non exposed

	OCP users	Non users
Cases	42	42
Controls	23	145

OR = ad/ bc = (42 * 145)/ (42 * 23) = approx. 6

131. B. 90 %

Proportion Attributable Risk = $\frac{\text{Incidence in exposed} - \text{Incidence in non-exposed}}{\text{Incidence in exposed}} = \frac{10 - 1}{10} = 90\%$

132. A. Retrospective & prospective study

Retrospective & prospective study are analytical studies

133. B. a-iii, b-ii, c-iv, d-i

Type of study	Unit of Study
a. Cohort Study	Individuals
b. Ecological study	Population
c. RCT	Patients
d. Field trials	Healthy volunteers

134. D. The attributable risk of breast cancer resulting from the pill may be directly measured

Attributable risk is calculated from cohort studies and not from case control studies

135. C. Done when incidence of disease is very low among exposed

Cohort studies can't be done when disease is rare

136. D. 2.25

OR = ad/ bc = (30 * 30)/ (20 * 20) = D

In this question the table is made reverse but in case of odd's ratio it doesn't have any impact on the answer as it is a cross product value

137. A. Strength of association between suspected cause and effect

RR classically measures the strength of association which is one of the criteria's in the ten criteria of Doll & Hill

138. C. Prospective

As follow up is mentioned so this is a prospective cohort

139. B. Randomization is done while selecting subjects for study

Randomization is done before selecting the subjects for study

140. B. Prospective study

Advanced Cohort Study: Case Control Studies Based in A defined Cohort

- Predominantly a type of cohort study (due to a forward direction)
- Advantages:
  - Problem of recall bias is eliminated
  - Advantage of temporality is maintained
  - Economical (Done for rare diseases + whose diagnostic tests are very expensive)

141. A. Is a cohort study nested in a case control study

Nested case control study is a case control study nested in a cohort

142. A. Case series report

As there is no comparison group so it is a case series report whereas in all other studies we have comparison group

143. C. Risk difference between exposed and non-exposed

Attributable risk is the extra risk due to any risk factor (Incidence in exposed - Incidence in non exposed)

144. D. Associated with antecedent causation

Cohort is exposed (cause) to disease (effect) study which maintains temporality

145. A. Case control study

Recall bias refers to the differential recall between cases & controls. Ex: If I do a case control study between Alzheimer's disease patients & normal people & ask them about the history of their 1st smoking; normal people will remember it better

146. B. Ecological study

As we are taking data from population so it is an ecological study

147. C. Rare diseases

For common diseases we would prefer cohort; for unknown diseases we do the case report/ series

148. C. Ecological study

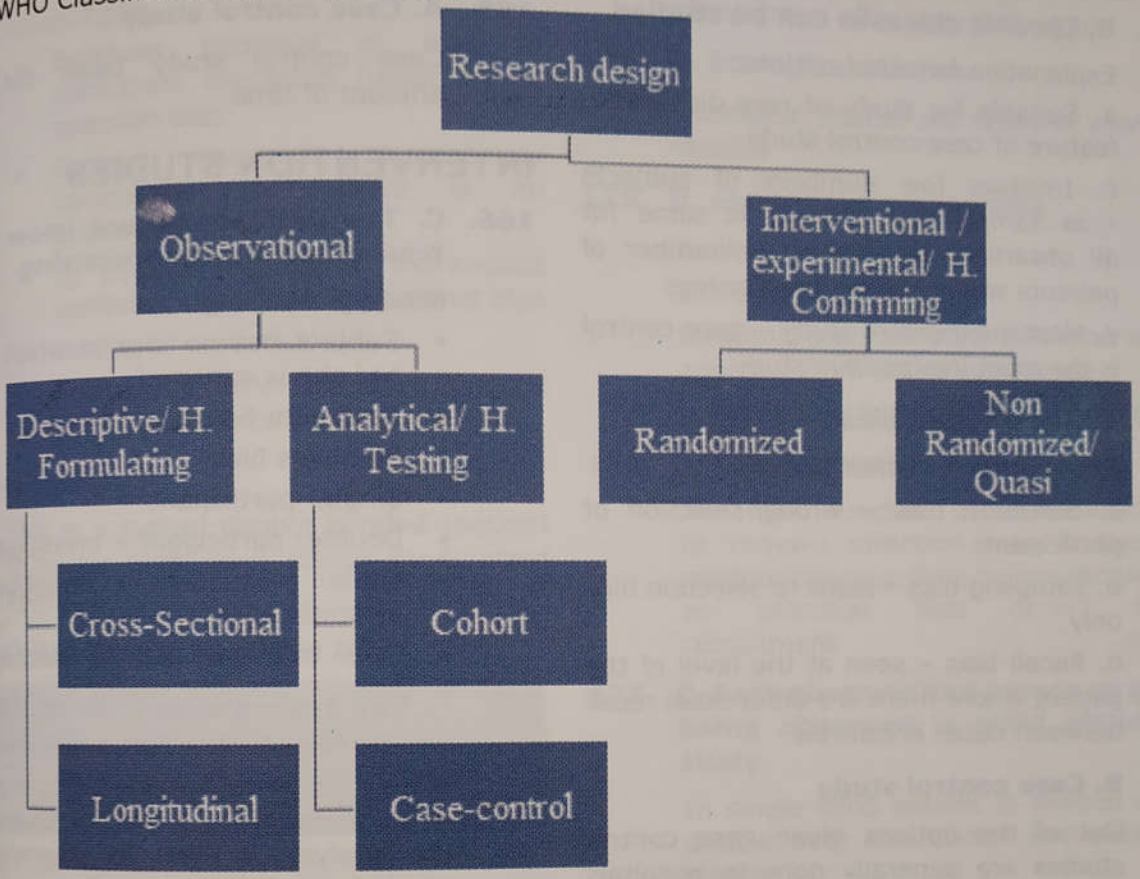
As we are taking the population into account so it is an ecological study

149. A. Case Control study requires more time than cohort study

Case control is the quickest study

150. B. Analytical study

WHO Classification of Study Designs



151. A. Temporal association

Case control studies lack temporality but this is present in nested case control study

152. D. Prevalence study

Cross sectional study provides us with period prevalence

153. C. Attributable risk cannot be calculated

Explanation for other Options:

a. Preferred study for rare diseases

b. OR is calculated

c. True option

d. Recall bias is typically associated with case control studies

154. B. Attributable risk

Attributable risk provides extra risk attributed due to a risk factor so out of the options given it is the best answer (AR > RR > OR > Absolute risk)

155. B. Tells aetiology

Aetiology is given by analytical & experimental study

156. D. Potential public health importance of disease

Explanation for other options

a. Strength of association between cause and effect – given by relative risk

b. Impact of successful preventive health programme – seen by drop in incidence & prevalence of disease

c. Assessing etiological role or factor in disease – given by OR, RR

157. A. Selection bias

Healthy worker effect is a type of selection bias which is seen when we take industrial workers as comparison groups because they are intrinsically healthier than the routine population

158. B. Chronic diseases can be studied

Explanation for other options:

a. Suitable for study of rare diseases – feature of case control study

c. Involves few numbers of subjects - as sample size formula is same for all observational studies so number of patients would not be more or less

d. Most inexpensive study – case control is the most inexpensive study

159. C. Observation bias

Explanation for Other Options:

a. Selection bias – wrong selection of participants

b. Sampling bias – leads to selection bias only

d. Recall bias – seen at the level of the patient where there is a differential recall between cases & controls

160. B. Case control study

Out of the options given case control studies are generally done in hospitals as it becomes easier to select both the study groups

161. B. Incidence can be calculated

Explanation for other options:

a. Needs few patients – as sample size formula is same for all observational studies so number of patients would not be more or less

c. Proceeds from effect to cause – proceeds from cause to effect

d. Odd ratio can be calculated – RR can be calculated

162. A. Cohort

In the question it mentions that we are seeing for alcohol intake for ten year period so there is a follow up so best answer is cohort.

163. A. Confounding factors

Matching removes known confounders

164. A. Only odd's ratio

Incidence, RR, AR, PAR are all calculated from cohort study

165. A. Case control study

Case control study takes the least amount of time

INTERVENTION STUDIES

166. C. The patients do not know which treatment they are receiving

Blinding/ Masking:

- Subject has no idea in which group he/ she is assigned
- Maximum 6 levels of blinding
- Removes bias
- Single: participant
- Double: participant + investigator
- Triple: participant + investigator + biostatistician
- Open trial: trial with no blinding

167. D. The dropouts from the trial should be excluded from the analysis

Drop outs are never excluded from the study; there are also accounted whenever the analysis is done as otherwise, we would have distorted results

168. C. It helps to eliminate alternative explanations for the results of the study

Control groups helps in comparison with the interventional group & rules out any other explanation except for the intervention

'Controlled' implies predefined:

- Eligibility criteria
- Specified hypotheses
- Primary and secondary endpoints to address hypotheses
- Methods for enrolment and follow up
- Rigorous monitoring
- Analysis plans and stopping rules

169. A. To equalize the effects of extraneous variables, thus guarding against bias

Randomization:

- Definition - Process by which each participant has the same & known chance of being assigned to either intervention or control
- Called as Heart of trial

Advantages:

- Removes potential of bias in participant allocation (most imp.): selection bias
- Groups becomes increasingly comparable (but there is no guarantee)
- To equalize effects of extraneous variables, thus guarding against bias
- Validity of statistical test
- Both groups have similar prognostic factors among two groups

170. A. Is a RCT

This is a typical double blinded (patient & doctor both don't know) randomized controlled trial.

171. C. Randomized control trials

Intention to Treat Analysis (Once Randomized Always Analysed)	Per Protocol Analysis
Doesn't take into account protocol violation	Analyse only those who fully complied to protocol
Compare outcome according to randomized group (gold standard)	Includes cross over in final analysis
Also called as randomized or method effectiveness analysis; provide good idea on efficacy	Doesn't provide fair idea of efficacy for treatment
Randomization is not affected	May be biased (randomization compromised)
50 and 50 analysis	55 and 45 analysis

172. D. Ensure that the study groups are comparable on base line characteristics

Option A refers to external validity which can't be affected by randomization

173. C. They use the patient as his or her own control

Pre post clinical trials are before and after studies; where we have two groups which are paired to each other where one group is before the intervention and other group after the intervention

174. D. Ecological studies

Ecological studies are types of analytical studies

175. D. Are always prospective

Explanation for other options:

a. We can double blind

b. Animal trials are done only after ethical approval from ethics committee

c. We can perform the interim analysis

176. A. Randomization

The main function of randomization is to remove selection bias & therefore randomization is done before recruitment as selection bias occurs during recruitment

177. C. Both observer and person or group being observed is blind about the study

In single blind patient is blinded and in double both the doctor and patient is blinded

META ANALYSIS & SYSTEMATIC REVIEW

178. D. Validity doesn't depend on quality of systemic review

Validity depends on the quality of systematic review & therefore there is typical limitation of systematic review which is GIGO (garbage in garbage out) that is if poor quality studies are taken into consideration, we would have poor quality of outputs

179. A. Meta-analysis always performed

Meta- analysis is the statistical component but it is not always necessary to be done in every systematic review

MISCELLANEOUS

180. D. Incorrect because as no control or comparison group was involved

Out of the options provided option 4 is the best as to draw comparisons we always need control groups

181. C. Cohort study

Of the options provided cohort is at the top of the ladder of epidemiological studies

Grading of study design based on strength of evidence

- **Experimental – clinical trial (best)**
- Cohort study
- Case-control study
- Longitudinal study
- Cross sectional
- Ecological study
- Case series
- Case Report
- Meta-Analysis & Systematic Reviews*- now clarified that is not an original research so not placed in this ladder any more

182. B. Temporal relationship

Temporality if the most important or mandatory criteria to establish causality seen in case of cohort & RCT

183. B. Temporality

Guidelines for causation

Temporal relation	Does the cause precede the effect? (essential)
Plausibility	Is the association consistent with other knowledge? (mechanism of action; evidence from experimental animals)
Consistency	Have similar results been shown in other studies?
Strength	What is the strength of the association between the cause and the effect? (relative risk)
Dose-response relationship	Is increased exposure to the possible cause associated with increased effect?
Reversibility	Does the removal of a possible cause lead to reduction of disease risk?
Study design	Is the evidence based on a strong study design?
Judging the evidence	How many lines of evidence lead to the conclusion?

- Specificity of association:
  - Implies that disease under study is caused only by risk factor under study
  - Most difficult criterion to establish
  - Weakest criterion of causal association

184. D. Indirect association

For causality to occur there has to be 10 factors (satisfying the Doll's & Hill criteria); it is the iodine deficiency which is responsible for goitre (direct association); temporality means exposure first then the disease which is not being evident in this example.

185. B. P value

Cronbach's alpha provides agreement between 2 variables; correlation & regression provide relationships

Screening of Disease – Questions

186. There are several points in the course of a disease process :

a. Disease onset
b. Point of first possible detection
c. Final critical point
d. Usual time of diagnosis
e. Final outcome

For a screening programme to be effective it should be applied between:

a. A and B
b. A and C
c. B and C
d. C and D

187. The diagnostic power of a test to correctly exclude the disease is reflected by :

a. Sensitivity
b. Specificity
c. Positive predictive value
d. Negative predictive value

188. Lead time refers to the time between

a. Disease onset and first critical diagnosis
b. Disease onset and first possible point of detection
c. First possible point of detection and final critical point
d. First possible point to detection and usual time of diagnosis

189. Screening for condition recommended when :

a. Low case fatality rate
b. Diagnostic tools not available
c. No effective treatment available
d. Early diagnosis can change disease course because of effective treatment

190. Screening is done because of all except:

a. Testing for infection or disease in population in individuals who are not seeking health care
b. It is defined presumptive identification of unrecognized disease
c. Search for unrecognized disease or defect by means of rapidly applied test, examination or other procedures in apparently healthy individuals
d. Use of clinical or laboratory tests to detect disease in individual seeking health care for other reasons

191. Which of the following are the characteristics features of screening tests?

a. Done on healthy people
b. Done on unhealthy people
c. More accurate
d. Less accurate
e. Less expensive
f. Moe expensive
g. Not a basis for treatment
h. Used as base for treatment

Select the correct answer using the code given below

a. B, D, E, H
b. A, C, E, H
c. B, C, F, G
d. A, D, E, G

192. Which of the following is an example of prospective screening :

a. Cervical pap smear in a 40 year old female
b. Neonatal screening in a newborn for hypothyroidism
c. Screening of immigrants in a country
d. Urine for sugar screening in a 40 year old male

193. In which of the following disease screening procedure increase the overall survival maximum :

a. Prostate cancer
b. Lung cancer
c. Colon cancer
d. Ovarian cancer

194. Screening of cervical cancer at PHC level is done by :

a. History and clinical examination
b. Colposcopy
c. CT scan
d. PAP smear

186. c	187. d	188. d	189. d	190. a	191. d	192. c	193. c	194. a

195. Screening test has the following features except :

a. Done on apparently healthy individuals
b. It is less accurate
c. Test result are arbitrary and final
d. It can be used basis for treatment

196. For the calculation of positive predictive value of a screening test the denominator is comprised of :

a. True positive + false negatives
b. False positives + True negatives
c. True positives + False positive
d. True positive + True negatives

197. All comprise inherent properties of a screening test except :

a. Sensitivity
b. Specificity
c. Yield
d. Predictive accuracy

198. The parameter of sensitivity and specificity are used for assessing :

a. Criterion validity
b. Construct validity
c. Discriminant validity
d. Content validity

199. Sensitivity for a test 'X' is 0.90 and specificity is .50. prevalence of disease a 'Y' in a population is 10% post test probability of test 'X' When applied to population 'Y' is :

a. 0.90 b. 0.84
c. 0.16 d. 0.10

200. True about the following is :

	MI present	MI absent
Positive ECG	300	100
Negative ECG	25	75

a. Sensitivity is less than specificity
b. Sensitivity is same as specificity
c. PPV is more than NPV
d. PPV is same as NPV

201. Positive predictive value is most affected by :

a. Prevalence b. Sensitivity
c. Specificity d. Relative risk

202. A diagnostic test for a particular disease has a sensitivity of 0.90 and a specificity 0.90. A single test is applied to each subject in the population in which the disease population is 10% . What is the probability that a person positive to this test, has disease :

a. 90% b. 81%
c. 50% d. 91%

203. In a group of patient's presenting to a hospital emergency with abdominal pain, 30% of patients have acute appendicitis. 70% of patient with appendicitis. Have a temperature greater than 37.5 degree Celsius and 40% of patient without appendicitis have a temperature greater than 37.5 degree Celsius. Considering these findings , which of the following statement is correct :

a. The sensitivity of temperature greater than 37.5 degree Celsius as a marker for appendicitis is 21/49
b. The specificity of temperature greater than 37.5 degree Celsius as a marker for appendicitis is 42/70
c. The positive predictive value of temperature greater than 37.5 degree Celsius as a marker for appendicitis is 21/30
d. The Specificity of the test will depend upon the prevalence of appendicitis in the population is which it is applied

204. Specificity of a screening test is the ability of a test to detect :

a. True positives
b. False positives
c. False negatives
d. True negatives

205. If the hemoccult test is negative for screening of colonic cancer, no

195. d	196. c	197. c	198. a	199. c	200. d	201. a	202. c	203. b	204. d

further test is done. If the hemoccult test is positive the individual will have a second stool sample tested with the hemoccult II test. If this second for blood, the individual will be referred for more extensive evaluation. The effect of net sensitivity and net specificity of this method of screening is:

a. Net sensitivity and net specificity are both increased
b. Net sensitivity is decreased and and net specificity is increased
c. Net sensitivity is increased and net specificity is increased
d. Net sensitivity remain the same and net specificity is increased

206. A screening test is used in same way in two similar population but the proportion of false positive result among population A is higher than those who test positive in population B. what is the likely explanation for this finding

a. The specificity of the test is lower in population A
b. The prevalence of disease is lower in population A
c. The prevalence of disease is higher in population A
d. The specificity of the test is higher in population A

207. A test for hepatitis C is performed for 200 patient with biopsy proven disease and 200 patient known to be free of the disease . The test shows positive results on 180 of the patients with the disease , and negative result on 150 of the patient without the disease . Among those tested , this tested this test therefore:

a. Has a positive predictive value of 90%
b. Has negative predictive value of 75%
c. Has sensitivity of 90 %
d. Has a specificity of 82.5%

208. Due to an effective prevention program the prevalence of an infectious disease in a community has been reduced by 90%. Physician continues to use the same diagnostic test for the disease that she has always used how have the test's characteristics changed :

a. Its sensitivity has increased
b. Its positive predictive value has increased
c. Its negative predictive value has increased
d. The test characteristic have not changed

209. For the diagnosis of Deep vein thrombosis 2 tests are done together namely impedence plethysmography and leg scanning after injecting 125I fibrinogen . This process will lead to :

a. Increasing the positive predictive value
b. Increasing the negative predictive value
c. Increasing the pre test odds
d. Increasing the specificity

210. Which one of the following relationship shown between different parameter of a performance of a test is correct :

a. Sensitivity = 1 - specificity
b. Positive predictive value = 1- negative predictive value
c. Sensitive is inversely proportional to specificity
d. Sensitivity = 1- positive predictive value

211. The usefulness of a screening test in a community depends on its

a. Sensitivity b. Specificity
c. Reliability d. Predictive value

212. In a population of 10,000 people, the prevalence of a disease is 20%. The sensitivity of a screening test is 95% and specificity is 80%. The PPV of test will be

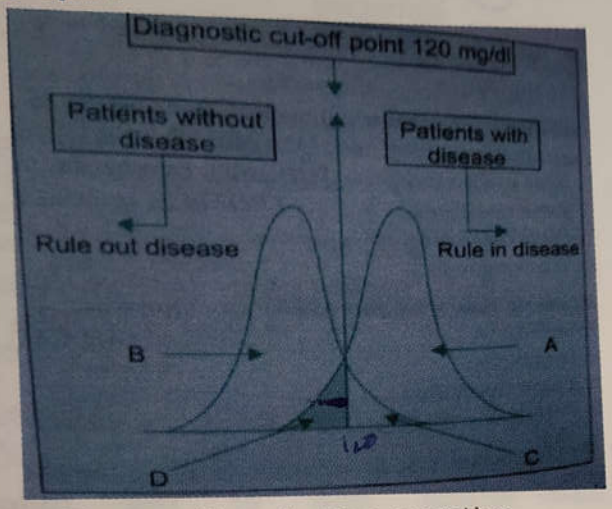
a. 54.3 b. 45.7
c. 15.3 d. 98.5

213. A test has high false positive rate in a community . True is :

a. High prevalence
b. Low prevalence
c. High sensitivity
d. High specificity

205. b	206. c	207. c	208. c	209. b	210. c	211. a	212. a
213. b							

214. A graph showing curves of Normal blood sugar level and Diabetic sugar level is shown below. Some area is found over lapping in the two curves. Diagnostic cut off point of 120 mg/dL is also marked what does the shaded areas (D) represent in the graph :



a. True positive b. True negative
c. False positive d. False negative

215. You have clinically diagnosed a patient as having SLE at this point , you need to know :

a. Incidence of SLE and Predictive value of each test
b. Incidence and prevalence of SLE
c. Relative risk of SLE in this patient
d. Prior probability of each test sensitivity and specificity of each test

216. Epidemiological survey of 'at risk' is called :

a. Survey b. Screening
c. Surveillance d. Rehabilitation

217. Which of the following is / are true about a screening test :

a. Sensitivity is false positive rate
b. Specificity is false negative rate
c. Predictive value depends on prevalence
d. None of the above

218. A city has a population of 10000 with 500 diabetic patients . A new diagnostic test gives true positive result in 350 patients and false positive result in 1900 patient which of the following is false regarding the test

a. Sensitivity is 70%
b. Specificity is 80%
c. Sensitivity is 90%
d. NPV is 98%

219. Most important factor for a test to be a good screening test is :

a. Specificity b. Sensitivity
c. Reliability d. Predictive value

220. If prevalence is increased which of the following will be seen :

a. Sensitivity increase
b. Specificity decrease
c. Increase positive predictive value
d. Decrease positive predictive value

221. 5000 persons underwent screening for a disease. Out of 500 diseased, 350 reported true positive and out of 4500 health 3000 reported true negative. Which of the following is correct about this screening test:

a. Sensitivity 70%
b. Specificity 70%
c. Sensitivity 80%
d. Specificity 80%

222. A diagnostic test for a particular disease has a sensitivity of 0.90 and a specificity of 0.80 . A single test is applied to each subject in the population in which the disease population is 30% what is the probability that a person . Negative to this test has no disease :

a. Less than 50%
b. 70
c. 95%
d. 72%

223. Denominator of negative predictive value :

a. Number of true negatives + number of false negatives
b. Number of true positive + number of true negative
c. Number of true positive + number of false positive
d. Number of true positive + number of false negative

214. d	215. d	216. b	217. c	218. c	219. b	220. c	221. a	222. c	223. a

224. Calculate sensitivity and specificity based on following table

	Test Positive	Test negative
Diseased	27	3
Non-diseased	5	95

a. Sensitivity 90 specificity 90
b. Sensitivity 95 specificity 90
c. Sensitivity 90 specificity 95
d. Sensitivity 95 specificity 95

225. False negative means :

a. Person have disease but show negative test result
b. Person have no disease but shows negative test
c. Person have disease but show positive test result
d. Person have no disease but show positive test result

226. Threshold of measurable data can be determined by :

a. ROC Curve
b. Frequency polygon
c. Histogram
d. Scatter Diagram

227. Receiver operator characteristic (ROC) curve is usually drawn between:

a. Sensitivity & specificity
b. (1-sensitivity) & specificity
c. Sensitivity & (1 - specificity)
d. (1-sensivity) & (1- specificity)

228. A screening test was positive in 50% of diseased and 10% of healthy population what is the specificity of the test :

a. 0.5
b. 0.9
c. 0.83
d. -0.064

229. Screening in general population done in cancers of all except:

a. Breast
b. Colon
c. Cervix
d. Lung

230. Not a part national screening program is:

a. Diabetes mellitus
b. Carcinoma cervix
c. Refractive errors
d. Dental malocclusion

231. Screening is not useful for

a. Ca colon
b. Breast Ca
c. Ca Pancreas
d. Ca cervix

232. In a test of 150 people for HIV, Western blot found that 50 people are suffering from HIV & 100 were not suffering from HIV. Out of this 50, 30 had positive results with ICT kit & only 70 were found to be negative as per the kit from the 100 labelled as negative from the western blot. What is the sensitivity for this test?

a. 30/ 60
b. 30/ 50
c. 70/ 90
d. 90/ 100

233.

Positive		ICT Kit		
		Negative	Total	
MP slide	Positive	30	30	60
	Negative	20	70	90
	Total	50	100	150

Calculate the PPV:

a. 30/ 60
b. 30/ 50
c. 70/ 100
d. 70/ 90

234. A virulent bacterial infection has an 80% case fatality rate if it is not identified early in its course, however prompt administration of antibiotics decreased the mortality rate to <5%. The risks of the antibiotic therapy are minimal. Which of the following labelled points is most appropriate for use as the optimal diagnostic cut point for results of the test?

Cut off at:

a. 1
b. 2
c. 3.5
d. 6

224. c	225. a	226. a	227. c	228. b	229. d	230. d	231. c	232. b
233. b	234. b						

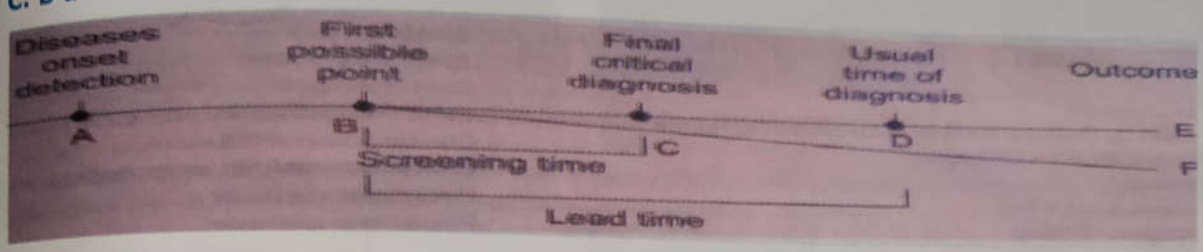
235. Doctor 1 diagnoses cervical cancer using PAP smear and mean age of diagnosis is 40 years, gives available treatment and patients die at 60 years. Doctor 2 diagnoses cervical cancer using a new screening test (Y) and mean age of diagnosis is 35 years, gives available treatment and patients die at 60 years. As compared to the doctor 1; doctor 2 has provided patient:

a. Lead time
b. Lead time bias
c. Screening time
d. None of the above

235. b

Screening of Disease – Explanations

186. C. B and C



187. D. Negative predictive value

Diagnostic power refers to predictive value so option A & B are ruled out; now exclusion comes from NPV

188. D. First possible point to detection and usual time of diagnosis

Refer to diagram of answer 1

Lead time the additional benefit obtained by early diagnosis

189. D. Early diagnosis can change disease course because of effective treatment

Of the options only option 4 suits best to the answer

190. A. Testing for infection or disease in population in individuals who are not seeking health care

Confusion will occur between option A & option C (refers to opportunistic screening). In India we don't screen people who don't seek medical care

191. D. A, D, E, G

Screening	Diagnosis/ Gold Standard
HIGH SENSITIVITY	HIGH SPECIFICITY
For apparently healthy	For persons with signs and symptoms
Based on one criteria (cutoffs) (Test results are arbitrary and final	Based on signs, symptoms, and lab findings
Relatively cheaper	Expensive
Not sufficient basis for treatment	Sufficient basis for treatment
Initiative from investigator	Initiative from a person with complaint
Applied to groups	Applied to individuals

192. C. Screening of immigrants in a country

Prescriptive screening	Prospective screening
People screened for own's benefit	People screened for other's benefit
Objective – case detection	Disease control
Example – Neonatal screening, Pap smear	Example – Immigrants screening, HIV screening among sex workers

193. C. Colon cancer

Of all the cancers maximum benefit is seen in colon cancer

194. A. History and clinical examination

Out of the options best is A; actually we do the visual inspection with acetic acid at PHC (PAP smear can't be read in PHC as no pathologist is posted so not done)

195. D. It can be used basis for treatment

Screening tests give false positives so can't be used as a basis of treatment

Option C means once screening test is

done; it is not repeated (results are taken as final & arbitrary which means it serves as a guiding factor)

196. C. True positives + False positive

Dichotomous Results: How good is the test?

Disease present by GOLD STANDARD (representing true characteristic in the population)

Test result	Yes	No
Positive	A (True positive)	B (False positive)
Negative	C (False negative)	D (True negative)

$$\text{Sensitivity} = \frac{\text{True positive}}{\text{True positive + False negatives}}$$

$$\text{Specificity} = \frac{\text{True negative}}{\text{True negative + False positives}}$$

PPV = TP/ TP + FP

NPV = TN/ TN + FN

197. C. Yield

Option a, b & d can be calculated directly from the 2 by 2 table of screening

Predictive accuracy refers to predictive values

198. A. Criterion validity

Criterion of sensitivity & specificity are used for assessing 'criterion validity'

199. C. 0.16

$$\text{PPV} = \frac{(\text{Sensitivity})(p)}{(\text{Sensitivity})(p) + (1 - \text{Specificity})(1 - p)}$$

$$\text{NPV} = \frac{(\text{Specificity})(1 - p)}{(\text{Specificity})(1 - p) + (1 - \text{Sensitivity})(p)}$$

p = prevalence of the disease in the population being studied expressed as a fraction (ex. 0.20 for 20% prevalence)

$$\text{PPV} = \frac{90 * 10}{(90 * 10) + (100 - 10) * (100 - 50)}$$

200. D. PPV is same as NPV

Sn = 300/ 325 = 92%

Sp = 75/ 175 = 42%

PPV = 300/ 400 = 75%

NPV = 75/ 100 = 75%

201. A. Prevalence

PPV is affected by Prevalence (maximum), sensitivity & specificity (but not incidence)

202. C. 50%

$$\text{PPV} = \frac{(\text{Sensitivity})(p)}{(\text{Sensitivity})(p) + (1 - \text{Specificity})(1 - p)}$$

$$\text{NPV} = \frac{(\text{Specificity})(1 - p)}{(\text{Specificity})(1 - p) + (1 - \text{Sensitivity})(p)}$$

p = prevalence of the disease in the population being studied expressed as a fraction (ex. 0.20 for 20% prevalence)

$$\text{PPV} = \frac{90 \times 10}{(90 * 10) + (100 - 10) * (100 - 90)} = 50\%$$

203. The sensitivity of temperature greater than 37.5 degree Celsius as a marker for appendicitis is 21/49

Appendicitis			
	No appendicitis	Total	
Fever > 37.5	21	28	49
No fever	9	42	51
Total	30	70	100

204. D. True negatives

- **Sensitivity/ Usefullness**: Ability of the test to identify correctly those **who have** the disease/ **TP**
- **Specificity**: Ability of the test to identify correctly those **who don't have** the disease/ **TN**
- **PPV**: If the test results are positive in this patient, **what is the probability that this patient has the disease** or in other words, what **proportion/ percentage** of patients who test positive actually have the disease in the question
- **NPV**: If the test results are negative in this patient, **what is the probability that this patient doesn't have the disease**

205. B. Net sensitivity is decreased and and net specificity is increased

This is test in series; as one test follows another

In series	In parallel
One after the other. 2nd screening test is applied only on those individuals tested positive on the 1st	Simultaneously all the tests are applied
• Sensitivity decreases • Specificity increases • PPV increases • NPV decreases	• Sensitivity increases • Specificity decreases • PPV decreases • NPV increases

206. C. The prevalence of disease is higher in population A

If false positive is low then the prevalence will be higher; sensitivity & specificity are not affected as they are the intrinsic properties of a test

207. C. Has sensitivity of 90 %

Positive		Gold Standard (Biopsy Proven Result)		
		Negative	Total	
Screening Test (New Test)	Positive	180	50	230
	Negative	20	150	170
	Total	200	200	400

Sn = 180/ 200 = 90%
Sp = 150/ 200 = 75%
PPV = 180/ 230 = 78%
NPV = 150/ 170 = 88%

208. C. Its negative predictive value has increased

Prevalence increase, PPV increases, NPV decreases, sensitivity & specificity is not affected & vice versa if the prevalence decreases

209. B. Increasing the negative predictive value

This is test in parallel so sensitivity increase, specificity decreases, PPV decreases, NPV increases

210. C. Sensitive is inversely proportional to specificity

Mathematically when sensitivity increase specificity decreases

211. A. Sensitivity

Sensitivity refers to the usefulness of a study

212. A. 54.3

Positive		Gold Standard		
		Negative	Total	
Screening Test	Positive	1900	1600	3500
	Negative	100	6400	6500
	Total	2000	8000	10000

PPV = 1900/ 3500 = 54.3%

213. B. Low prevalence

High false positivity means low prevalence (sensitivity & specificity don't change). This is derived mathematically.

214. D. False negative

The shaded area refers to the place where people having disease would be labelled as normal

215. D. Prior probability of each test sensitivity and specificity of each test

For interpretation of any test we need the predictive values which depends on prior probability/ prevalence, sensitivity & specificity

216. B. Screening

Screening is defined as search for 'at risk' population so that they can be identified and treated

217. C. Predictive value depends on prevalence

Predictive value depends maximum of prevalence

218. C. Sensitivity is 90%

Positive		Gold Standard		
		Negative	Total	
Screening Test	Positive	350	1900	2250
	Negative	150	7600	7750
	Total	500	9500	10000

PPV = 350/ 2250 = 15.5%
NPV = 7600/ 7750 = 98%
Sn = 350/ 500 = 70%
Sp = 7600/ 9500 = 80%

219. B. Sensitivity

For screening tests a higher sensitivity is important as it leads to a lower false negatives & for 1 2 by 2 table for tests false negatives are more dangerous

220. C. Increase positive predictive value

Parameters	Prevalence Increase	Prevalence Decrease
Sensitivity	CONSTANT (INTRINSIC PROPERTIES OF A TEST))	
Specificity		
PPV	Increase	Decrease
NPV	Decrease	Increase

221. A. Sensitivity 70%

Positive		Gold Standard		
		Negative	Total	
Screening Test	Positive	350	1500	1850
	Negative	150	3000	3150
	Total	500	4500	5000

Sn = 350/ 500 = 70%
Sp = 3000/ 4500 = 66.67%
PPV = 350/ 1850 = 18.9%
NPV = 3000/ 3150 =95.2%

222. C. 95%

Positive		Gold Standard		
		Negative	Total	
Screening Test	Positive	27	14	41
	Negative	3	56	59
	Total	30	70	100

223. A. Number of true negatives + number of false negatives

NPV = TN/ (TN + FN)

224. C. Sensitivity 90 specificity 95

Table has been reversed

	Diseased	Non-diseased
Test Positive	27	5
Test Negative	3	95

Sn = 27/ 30 = 90%
Sp = 95/ 100 = 95%

225. A. Person have disease but show negative test result

Explanations for other options:

b. Person have no disease but shows negative test - TN

c. Person have disease but show positive test result - TP

d. Person have no disease but show positive test result - FP

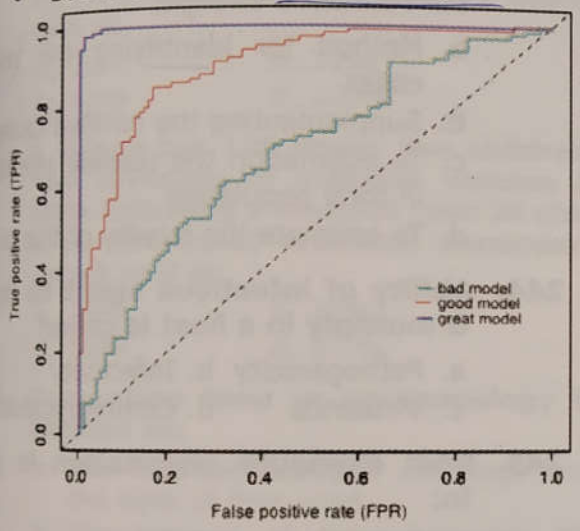
226. A. ROC Curve

ROC stands for receiver operator curve which tells about best cut-off/ threshold

227. C. Sensitivity & (1 - specificity)

Receiver Operator Curve:

- X- axis: 1 – Specificity/ FP
- Y- axis: Sensitivity/ TP
- Clinical use: determine cut off
- Mathematically equivalent to LR for a positive result
- Types:
- Straight line at 45° (a): no benefit by this cut off
- (b) & (c): fair & good results
- (d): perfect ROC
- Excellent
- 100% sensitivity & specificity



228. B. 0.9

Since 50% of diseased is given; so we start from filling up TP + FN

Positive		Gold Standard		
		Negative	Total	
Screening Test	Positive	50	10	60
	Negative	50	90	140
	Total	100	100	200

229. D. Lung

Of all the options given lung cancer is the least preferred option as for lung cancer screening tool is HRCT which is not possible at the community level

230. D. Dental malocclusion

Out of the options we don't have screening for dental malocclusion

DM & carcinoma cervix are screened in NCD program; refractive errors & dental carries in school health program

231. C. Ca Pancreas

Ca pancreas has rapid progression so there is no benefit of screening it

232. B. 30/ 50

Practical Approach to Question on 2 by 2 Table

- Step 1: Draw the 2 by 2 table & label it
- Step 2: Write the total population (if total population is not mentioned then we most commonly assume it as hundred)
- Step 3: Write the column 1 total. This is obtained from 3 sources:
  - Prevalence
  - Those mentioned positive with gold standard
  - Those mentioned diseased
- Step 4: We fill the 4 cells & apply the formula

Positive		Gold Standard		
		Negative	Total	
Screening Test	Positive	30	30	60
	Negative	20	70	90
	Total	50	100	150

233. B. 30/ 50

In this 2 by 2 table; the table has been given reverse that is the gold standard is given in the row side & screening test in column side so the formula needs to be reversed or table needs to be corrected to get the PPV = 30/ 50

Positive		MP slide		
		Negative	Total	
ICT Kit	Positive	30	20	50
	Negative	30	70	100
	Total	60	90	150

234. B. 2

As the disease has high mortality; and treatment reduces the mortality to less than 5% so treatment should be initiated at start of infection that is at 2

235. B. Lead time bias

As despite of early diagnosis with the new screening test (Y) yet there is no improvement in the survival so it is called as lead time bias

Preventive Aspects of Communicable Diseases – Questions

BASIC CONCEPTS

236. The secondary attack rate of measles is more than mumps. What is the conclusion?

a. Measles is more dangerous than mumps.
b. Mumps is more dangerous than measles.
c. Measles is more infectious than mumps
d. Measles is more common than mumps

237. Changes in occurrence of a disease over long periods of time are known as:

a. Epidemics b. Seasonal trends
c. Cyclical trends d. Secular trends

238. All are true for Point source epidemic except:

a. Epidemic curve rises and falls sharply
b. Clustering of cases within a short period of time
c. Person -to-Person transmission
d. All cases usually develop within one incubation period

239. Infections transmitted to man from vertebrate animal are known as:

a. Exotic
b. Anthropozoonoses
c. Zooanthroponoses
d. Epizootic

240. Endemic disease means that a disease:

a. Occurs clearly in excess of normal expectancy
b. Is constantly present in a given population group
c. Exhibit seasonal pattern
d. Is prevalent among animal

241. Occurrence of a disease in a haphazard and irregular pattern is known as:

a. Endemic c. Epidemic
c. Sporadic d. Pandemic

242. HIV cases are reported from all over the world this is called as:

a. Endemic b. Epidemic
c. Pandemic d. Sporadic

243. Following is part of sentinel surveillance except:

a. Method for identifying the missing cases
b. Supplementing the notified cases
c. To estimation the disease prevalence in total population
d. To estimate the fatality of the disease

244. Ability of infectious agent to invade & multiply in a host is called

a. Pathogenicity b. Infectivity
c. Virulence d. Communicability

245. Post exposure vaccination is given in:

a. Typhoid b. Rabies
c. Mumps d. Rubella

246. Subclinical infection is not seen in:

a. Rabies b. AIDS
c. Polio d. Hepatitis A

247. Disease imported in a country which was not otherwise present :

a. Epornithic disease
b. Zoonotic disease
c. Exotic disease
d. Epizootic disease

248. Soil is an important reservoir for all except:

a. Brucellosis b. Coccidiomycosis
c. Anthrax d. Tetanus

236. c	237. d	238. c	239. b	240. b	241. c	242. c	243. d	244. d	245. b, a
246. a	247. c	248. b							

249. Time taken for 50% of patients to develop disease following exposure to disease is known as:

a. Incubation period
b. Median incubation period
c. Generation time
d. Secondary attack rate

250. In a 6 membered family there are 2 parents & 4 children all aged between 2-6 years. One of the child (3 yr old) is completely immunized for his age whereas other 3 siblings are totally unimmunized. On 12 August, 2006 one of the latter got measles. 2 other siblings also suffered of measles by 18 august 2006. Secondary attack rate is:

a. Zero
b. 33%
c. 66%
d. 100%

251. A village has 100 under five children. The coverage of measles vaccine is 60% following a measles case 26 children developed measles. Secondary attack rate is:

a. 25%
b. 40%
c. 50%
d. 67 %

252. Generation time in epidemiology is defined as:

a. The interval between marriage and the birth of first child
b. The interval of time between the receipt of infection by host and maximal infectivity of the host
c. The Interval of time between primary case and secondary cases
d. Interval of time between invasion by infectious agent and appearance of first sign or symptom of the disease / in question

253. Seasonal trends is :

a. Seasonal variation of disease occurrence may be related to environmental conditions
b. Some Diseases occurs in cyclic spread over short period of time.
c. Some disease occurs in cyclic changes over long period of time
d. Non infectious Conditions never show periodic fluctuations

254. The transmission of filariasis is an example of:

a. Propagative transmission
b. Cyclical transmission
c. Cyclo developmental transmission
d. Cyclo propagative transmission

255. The following diseases are communicable during part of incubation period except:

a. Measles
b. Whooping cough
c. Hepatitis A
d. Typhoid

256. Which of the following statement about "reservoir" of an infection is not correct?

a. Reservoir can transmit infection to a susceptible host
b. Reservoir and source of infection are synonymous to host
c. Non living thing can be reservoir
d. Reservoir can be human and animal

257. Which of the following statement incubation period (IP) is not correct?

a. It is the time interval between invasion by an infectious agent and appearance of the first sign or symptom
b. During IP the infectious agent undergoes multiplication in the host
c. Factors such as infective dose & portal of entry determines IP
d. Infectious disease are not communicable during IP

258. Incubatory carriers seen in all except:

a. Cholera
b. Influenza
c. Mumps
d. Measles

259. Isolation is needed in which of the following disease:

a. Diphtheria
b. T.B.
c. Cholera
d. Herpes zoster

260. Quarantine period should be:

a. Minimum incubation period
b. Maximum incubation period
c. Period of communicability
d. Median incubation period

261. First case that comes to notice of physician is:

a. Primary case
b. Secondary case
c. Index case
d. Refer case

249. b	250. d	251. d	252. b	253. a	254. c	255. d	256. b	257. d	258. a
259. b	260. b	261. c							

262. Application of incubation period is all except:

a. To differentiate primary case from secondary cases
b. To find out time for isolation
c. To find out time for quarantine
d. To prevent infection to the contracts of the infected person

263. Chronic carrier state is seen in:

a. Poliomyelitis b. Measles
c. Malaria d. Tetanus

264. Man is dead end for:

a. Tetanus, measles
b. Measles, yellow fever
c. Tetanus, yellow fever
d. Rabies, tetanus

265. Herd immunity is not seen in:

a. Polio b. Tetanus
c. Measles d. Diphtheria

266. A carrier who gets infected from another carrier is known as:

a. Incubatory carrier
b. Paradoxical carrier
c. convalescent carrier
d. Pseudo carrier

267. In which of the following carrier has no role in transmission?

a. Cholera b. Measles
c. Diphtheria d. Typhoid

268. Man is secondary host in:

a. Malaria b. Hydatid disease
c. Both d. Filariasis only

269. The area is declared free of epidemic

a. Till last secondary case recovers
b. No new case reported for the incubation period of disease since the last case
c. No new case reported for twice the incubation period of disease since the last case
d. No new case reported for six months since the last case

270. Which of the following is the initial most step in investigation of an epidemic?

a. Defining the population at risk
b. Confirmation of existence of an epidemic
c. Verification of diagnosis
d. Rapid search for all cases and their characteristic

271. All of the following are true about the Herd immunity for infectious disease except :

a. It refers to group protection beyond what is afforded by the protection of immunized individuals
b. It is likely to be more for infection that do not have a sub clinical phase
c. It is affected by the presence and distribution of alternative animal hosts
d. In case of tetanus it does not protect the individual

272. Consider the following statements:
The term' disease control' describes ongoing operations aimed at reducing the
1. Incidence of disease
2. Financial burden to the community
3. Effects of infection including both physical and psychological complications
4. Duration of disease and its transmission of these statements:

a. 1,2 and 3 are correct
b. 1,3 and 4 are correct
c. 1,2 and 4 are correct
d. 1,2,3 and 4 are correct

273. All of the following statements about eradication programme are true except:

a. There is complete interruption of disease transmission in the entire area of the community
b. Eradication programme is over once the disease has been certified as having been eradicated
c. Case finding is of secondary importance
d. The objective is to eliminate the disease to the extent that no new case occurs in the future

274. Which disease is not eliminated from India is/ are:

a. Small pox
b. Guinea worm Disease
c. Yaws
d. Measles

262. b	263. c	264. d	265. b	266. b	267. b	268. a	269. c	270. b	271. b
272. c	273. a	274. d							

275. Disease eradicated from world:
a. Small pox b. Guinea worm
c. Polio d. Diphtheria

276. An epidemic of Hepatitis A is an example of
a. Common Source , single exposure epidemic
b. Common Source, continuous exposure epidemic
c. Propagated epidemic
d. Slow epidemic

277. An outbreak of viral hepatitis was reported from a town between June and August of a particular year. Of total cases 60% occurred in July, exposure of the community to infection is from
a. Common single source for short period
b. Common single source for prolonged period
c. Multiple source for short period
d. Multiple source for prolonged period

278. A graph shows an uniform curve with no secondary curves the following statement is correct:
a. Multiple exposure
b. Point source epidemic
c. Sporadic
d. Pandemic

279. Causative agent is present but there is no transmission is known as:
a. Elimination b. Control
c. Eradication d. Holoendemic

280. Zero incidence in an area is:
a. Elimination of disease
b. Eradication of disease
c. Elimination of infection
d. Eradication of infection

281. All of the following are eradicable diseases except
a. Tuberculosis b. Guineaworm
c. Poliomyelitis d. Measles

282. Missing cases are detected by
a. Active surveillance
b. Passive surveillance
c. Sentinel surveillance
d. Monitoring

283. Sentinel surveillance is for all except
a. Border districts
b. For malaria surveillance
c. Effective sanitary surveillance
d. Supplementary to routine notification

284. Reservoir for hookworm is:
a. Man b. Soil
c. Both d. None

285. Which of the following is not a notifiable disease as per WHO in India?
a. Cholera b. Yellow fever
c. TB d. Plague

INDIVIUDAL INFECTIOUS DISEASES PREVENTION

RESPIRATORY INFECTIONS

CHICKEN POX

286. The infectivity of chickenpox lasts for:
a. Till the last scab falls off
b. 6 days after onset of rash
c. 3 days after onset of rash
d. Till the fever subsides

287. Smallpox eradication was successful due to all of the following reasons except :
a. Subclinical cases did not transmit the disease
b. A highly effective vaccine was available
c. Infection provided lifelong immunity
d. Cross resistance existed with animal pox

288. WHO declared global eradication of small px on :
a. 26th octobler 1977
b. 5th july 1975
c. 17th may 1975
d. 8th may 1980

289. Secondary attach rate of chicken pox is:
a. 60 b. 50
c. 90 d. 40

275. a	276. c	277. d	278. b	279. a	280. a	281. a	282. c	283. c	284. a
285. c	286. b	287. d	288. d	289. c					

MEASLES

290. Which of the following is not true of measles :

a. High secondary attack rate
b. Only one strain causes infection
c. Not infectious in pro-dromal stage
d. Infection confers lifelong immunity

291. Which of the following is the least common complication of measles :

a. Diarrhea b. Pneumonia
c. Otitis media d. SSPE

292. Which of the following statement is true about the epidemiological determinants of measles :

a. Measles virus survives outside the human body for days
b. Carriers are important sources of infection
c. Secondary attack rate is less than that of rubella
d. Incidence of measles is more in males than females

293. True about measles is all except:

a. Koplik's spots appear as rash disappears
b. It is prevented by both active and passive immunization
c. Otitis media and meningitis are the most common complications
d. TB is aggravated in post measles

294. Which of the following is the reservoir for measles :

a. Man b. Soil
c. Fomites d. Monkey

295. Measles vaccination campaign between 9months -15 years age for elimination is :

a. Keep up b. Follow up
c. Mop up d. Catch up

296. Most common cause of death due to measles is :

a. Pneumonia
b. Secondary bacteria infection
c. Measles encephalitis
d. Otitis media

297. Post exposure measles vaccine must be given within _____ days of exposure

a. 1 b. 3
c. 7 d. 10

298. To Eradicate measles the percentage of infant population to be vaccinated is at least _____ %

a. 70 b. 80
c. 85 d. 95

299. The incubation period of measles is:

a. 3 days b. 10 days
c. 21 days d. 30 days

300. All are true about measles except :

a. Both active and passive immunization are given simultaneously
b. Flaring up of TB
c. Most infectious during rashes
d. Causes pneumonia and otitis media

301. A baby was given a dose measles vaccine at 6 months of age due to epidemic of measles / malnutrition. Correct regarding giving subsequent dose will be :

a. Give one more dose as soon as possible
b. Give after 14-16 months with booster dose
c. Give again at 9 months of age
d. No dose required

RUBELLA

302. Recommended vaccination strategy for rubella is to vaccinate first and foremost :

a. Women 15-49 years
b. Infants
c. Adolescent Girls
d. Children 1-14 years

DIPHTHERIA

303. Management of not immunized diphtheria contacts include all except:

a. Single dose of toxoid
b. Daily throat examination
c. Daily throat swab culture
d. Weekly throat swabs examination

290. c	291. d	292. c	293. a	294. a	295. d	296. b	297. b	298. d	299. c
300. a	301. c	302. a	303. b						

MENINGOCOCCAL MENINGITIS

304. Vaccine for meningococcal meningitis should be routinely given to :

a. Laboratory workers
b. Young adolescent
c. 4-8 years old children
d. Elderly population

305. Prophylaxis of meningococcal meningitis is:

a. Ciprofloxacin b. Rifampicin
c. Penicillin d. Ceftriaxone

TUBERCULOSIS

306. If the objective of the investigator is due to assess the incidence of tuberculosis infection in a community, the most appropriate methodology would be to :

a. Identify all individual with positive tuberculin test
b. Perform sputum examination of chest symptomatic
c. Identify new converters to Tuberculin test
d. Screen all under five children with tuberculin test

307. Point of control in tuberculosis the infection is:

a. < 1 % in 0-14 group of children
b. > 1 % is all children 0-5 yrs age group
c. < 1 % in 15-49 of age group
d. <2 % in 0-14 group

308. The most appropriate test to assess the prevalence of tuberculosis infection in a community is :

a. Mass miniature radiography
b. Sputum examination
c. Tuberculin test
d. Clinical examination

309. National tuberculosis institute is located at:

a. New Delhi b. Chingelput
c. Bangalore d. Chennai

310. Decrease in which of the following parameter indicate the decrease in tuberculosis problem in India:

a. Incidence of infection
b. Prevalence of infection
c. Incidence of disease
d. Prevalence of disease

311. Population of a village on 1st june 2007 is 16500. Since 1st January 2007,22 new cases of TB were detected. Total registered cases were 220. What is the incidence of TB ?

a. 133 per 100,000
b. 121 per 100, 000
c. 111 per 100,000
d. 100 per 100, 000

312. Mckeown's theory state that reduced prevalence of tuberculosis occur due to :

a. Enhanced knowledge and awareness
b. Medical advancement
c. Behavioural modification
d. Social and environmental factors

313. A lactating women has sputum positive tuberculosis and her neonate child is 3 months old what is the recommended chemoprophylaxis:

a. INH 5ng/ kg for 3 months
b. INH 10 mg / kg for 3 months
c. INH 5 mg / kg for 6 months
d. INH 10 mg/kg for 6 months

314. One TB infected person can infect how many people in 1 year

a. 20 b. 30
c. 10 d. 5

315. Xpert MTB/RIF test is used to detect

a. For assessing resistance to isoniazid
b. For assessing multi drug resistant TB
c. For assessing rifampicin resistance
d. Monitoring drug response in MDR

316. 1 ml of expectoration contains what number of TB bacilli in an active case of TB:

a. 100 b. 1,000
c. 10,000 d. 1,00,000

317. In India a tubercular mother is advised for all except:

a. Give baby BCG
b. ATT to mother
c. Withhold breastfaeeding
d. Give INH prophylaxis to baby

304. b	305. d	306. c	307. a	308. c	309. c	310. a	311. a	312. d	313. d
314. c	315. c	316. c	317. c						

GASTROINTESTINAL INFECTIONS

POLIO

318. True about complete eradication of poliomyelitis from india is :

a. From 2012 onwards , no vaccine associated polio case has been detected
b. Last polio case in India was reported in 13 january 2011
c. Mostly IPV is used currently
d. India is the only country which is not able to eliminate it completely

319. Which of the following is not a type of vaccine derived polio virus :

a. cVDPV b. iVDPV
c. aVDPV d. mVDPV

320. Wild poliomyelitis is still endemic in all except:

a. Sri lanka b. Pakistan
c. Nigeria d. Afghanistan

321. Which of the following serotypes of poliovirus is commonly associated with VAPP?

a. Serotype 1 b. Serotype 2
c. Serotype 3 d. Serotype 1 and 2

CHOLERA

322. The freshly prepared ORS (Oral rehydration solution) should not be used after:

a. 6 hours b. 12 hours
c. 18 hours d. 24 hours

323. The best approach to prevent cholera epidemic in a community is:

a. Mass chemoprophylaxis with tetracycline
b. Vaccination of all individuals
c. Health education
d. Safe water and sanitation

324. Which of the following is drug of choice for chemoprophylaxis of cholera :

a. Tetracycline b. Doxycycline
c. Furazolidone d. Azithromycin

325. For controlling an outbreak of cholera all of the following measures are recommended except:

a. Mass chemoprophylaxis
b. Proper disposal of excreta
c. Chlorination of water
d. Early detection and management of cases

326. Which of the following about the composition of new ORS is wrong :

a. NaCI-2.6 grams / litre
b. KCL - 1.5 grams / litre
c. Glucose - 13.5 grams / litre
d. Total osmolarity - 300 mmol

TYPHOID

327. Which is true of typhoid?

a. Female carriers are less common
b. Male carriers though less are more dangerous
c. Gall bladder usually no involved in carrier state
d. Tetracycline is the DOC for carriers

328. Drug of choice for carrier of typhoid is

a. Ampicillin
b. Chloramphenicol
c. Cotrimoxazole
d. Clindamycin

329. Typhoid oral vaccine is given :

a. 1, 3 , 5 days
b. 1, 2, 3 days
c. 1,2,4
d. 0, 6 months, 1 year

330. Isolation in patient with salmonellosis is done :

a. Till fever subsides
b. Till widal becomes negative
c. Till 3 stool test are negative
d. For 48 hrs of chloramphenicol treatment

DRACUNCULIASIS

331. All of the following statements regarding dracunculiasis are true except :

a. India has eliminated this disease
b. Niridazole prevents transmission of the disease
c. The disease is limited to tropical and subtropical region
d. No animal reservoir has been proved

318. b	319. d	320. a	321. c	322. d	323. d	324. d	325. a	326. d	327. b
328. a	329. a	330. c	331. b						

332. Uses of chandler's index for hookworm include all except :

a. Assessment of endemicity
b. Monitoring individual treatment
c. Monitoring mass treatment of community
d. Comparison of worm load in different population

333. WHO consideration regarding Dracunculosis eradication , all are true except :

a. Drinking piped water and installation of hand pumps
b. DDT
c. Health education and awareness of public
d. Control of Cyclops

334. Guinea worm infestation is common in workers of :

a. Step wells b. Ponds
c. Fields d. Coton mills

335. Dracunculiasis was more common in which of the following state :

a. Orissa b. Rajasthan
c. Tamil nadu d. U.P

NOTE – ALL THE ANSWERS ARE AS PER NATIONAL IMMUNIZATION SCHEDULE 2018 GUIDELINES GOVT OF INDIA

336. Which of the following statement regarding live vaccines is true?

a. Two live vaccine cannot be administered simultaneously
b. Booster doses are not required when live vaccines are administered
c. Can be given to pregnant females
d. Live vaccine contains both major and minor antigens

337. Strain used for BCG vaccine:

a. Edmonston zegreb strain
b. Oka strain
c. Danish 1331
d. RA 27/3strain

338. Most heat sensitive vaccine is:

a. BCG b. Pollo
c. Measles d. DPT

339. A 10 month old unimmunized child should be given:

a. DPT -1 OPV - 1 measles vitamin A
b. BCG DPT - 1 OPV measles vitamin A
c. BCG DPT - 1 OPV 1
d. No vaccine is needed

340. Which of the following statement is true about BCG vaccination?

a. Distilled water is used as diluent for BCG vaccine
b. Site for injection should be cleaned thoroughly with spirit
c. Mantoux test become positive after 48 hours of vaccination
d. WHO recommends Danish 1331 strain for vaccine production

341. A 3yr old child, completely unimmunized comes to an clinic for immunization. He should receive:

a. BCG , measles vitamin A
b. DPT-1, OPV-1, Vitamin A
c. BCG, DPT -1, OPV-1, Measles vitamin A
d. Not needed to immunize

342. All of the following are killed vaccines except:

a. Salk polio
b. Japanese encephalitis
c. Rabies
d. Yellow fever

343. The efficiency of cold chain system for OPV as monitored by vaccine viral monitor (VVM) depends on:

a. Change in the colour of vaccine
b. Temperature indicators of the system
c. Viral potency test
d. Change in colour of monitor on vaccine vial

344. All of the following statement are true about DPT vaccine except :

a. Aluminium salt has adjuvant effect
b. Whole killed bacteria of Bordetella Pertussis has an adjuvant effect
c. Presence of acellular pertussis increases its immunogenicity
d. Presence of H. Influenzae type B increases its immunogenicity

332. c	333. b	334. a	335. b	336. d	337. c	338. b	339. b	340. d	341. b
342. a	343. d	344. c						

345. Temperature in an ILR at PHC is recorded using:
a. Kala thermometer
b. Sling psychrometer
c. Dial thermometer
d. Anemometer

346. The risk of cold chain failure is greatest at:
a. Regional level
b. District level
c. PHC level
d. Sub centre & village level

347. If a 11 month old child has received two doses of DPT & polio comes for further immunization after 5 months of the last dose what should be done?
a. Repeat the whole course
b. Repeat the 2nd dose and continue rest of the course
c. Give 3rd dose and continue the course
d. Give only booster dose

348. In one single visit, a 6 year old un immunized child can be given the following vaccination:
a. Only DPT
b. BCG , DPT-1, OPV-1
c. DPT-1 , OPV-1 measles
d. BCG , DPT-1 OPV-1, measles

349. All of the following statement are true about DPT vaccine except:
a. It should be stored in ILR
b. Exposure to direct sunlight when in use should be avoided
c. Store stock are needed for three months at PHC level
d. Half used vials should not be put back into the cold chain after the session

350. Which vaccine is contraindicated in pregnancy?
a. Rubella b. Diphtheria
c. Tetanus d. Hepatitis B

351. Adjuvant used in DPT is:
a. Silica b. Magnesium
c. Manganese d. Aluminum

352. Administration of which vaccine can result in paralysis in children:
a. Measles vaccine
b. Sabin polio vaccine
c. DT vaccine
d. DPT vaccine

353. Which of the following vaccine is not administration at birth?
a. OPV b. BCG
c. Hepatitis B d. HIB

354. BCG vaccination is given:
a. Prodermally
b. Subcutaneously
c. Intramuscularly
d. Intradermally

355. The following is true for live vaccines except:
a. Live vaccines engage certain tissue of the body
b. Live vaccines should not be administered to a patient of leukemia
c. Two live vaccines cannot be given simultaneously
d. With an exception immunization is generally achieved with a single dose of live vaccine

356. Vaccine which can be frozen is:
a. BCG b. OPV
c. DPT d. Measles

357. Which of the following is false regarding oral polio vaccine?
a. It is killed vaccine
b. Residual neuro paralysis is a complication
c. Requires sub zero temperature for storage long herm
d. Induces intestinal and humoral immunity

358. Vaccine with maximum efficacy:
a. OPV b. Measles
c. BCG d. TT

359. In national immunization programme total no of primary OPV doses are :
a. 3 b. 4
c. 5 d. 6

345. c	346. d	347. c	348. a	349. d	350. a	351. d	352. b	353. d	354. d
355. c	356. b	357. a	358. b	359. c					

360. False about vaccines:
a. Thiomersal is used as preservative in DPT vaccine
b. Kanamycin is used as preservative in measles vaccine
c. Neomycin is used as preservative in BCG vaccine
d. Magnesium chloride used to stabilize OPV

361. Vaccine which should not be given to an elderly man is:
a. Measles vaccine
b. H influenza vaccine
c. TT vaccine
d. Pneumococcal vaccine

362. How many fully frozen ice pack should a vaccine carrier contain?
a. 2 b. 4
c. 6 d. 8

363. At primary health centre (PHC) level vaccines are stored in the:
a. Cold box
b. Deep freezer
c. Ice lined refrigerator
d. Walk in cold room

364. Which booster dose is given to a 5-6 year old child?
a. Measles b. BCG
c. DT d. DPT

365. In measles outbreak measles vaccine can be given in age group of:
a. 2-3 months b. 3-5 months
c. 2-7 months d. 6-9 months

366. Toxic shock syndrome is due to which vaccine :
a. Mumps b. Measles
c. Salk d. Tetanus

367. Rabies vaccine for pre exposure prophylaxis is given at:
a. 0, 3, 7 days
b. 0, 3, 7, 14 days
c. 0, 3, 7, 14, 30 days
d. 0, 7, 28 days

368. According to latest guidelines of vaccination which of the following is applicable at the age of 5 years:
a. DT booster + vitamin A
b. DT
c. DPT + OPV
d. DPT + Vitamin A

369. True about polio vaccination is all except:
a. Follow up of AFP every 30 days
b. Salk contains two types of polio virus
c. Pulse polio doses are extra and supplemental
d. Oral polio vaccine provides intestinal immunity also

370. OPV Bivalent vaccine contains:
a. P1 & P2 b. P1 & P3
c. P2 & P3 d. P1, P2 & P3

371. False regarding SA -14-14-2 Japanese Encephalitis vaccine:
a. Cell culture derived live attenuated
b. Killed vaccine
c. Life long immunity
d. Primary schedule consist of 2 doses

372. Which of the following is not true about oral polio vaccine?
a. Induces both local & systemic immunity
b. Maternal antibody is completely protective
c. Live attenuated vaccine
d. Requires sub zero temperature for long term storage

373. The vaccine administered as Nose drops in:
a. Polio b. Rubella
c. Influenza d. Measles

374. Live attenuated vaccine can be given to:
a. Children under 8 years
b. HIV patients
c. Patients on steroids
d. Patients on radiation

375. Most common cause of vaccine failure is
a. Improper storage
b. Improper administration
c. Inappropriate manufacturing
d. Maternally derived antibodies

360. c	361. a	362. b	363. c	364. d	365. d	366. b	367. d	368. d	369. a
370. b	371. b	372. b	373. c	374. a	375. a			

376. Addition of killed Bordetella Pertussis microorganism to diphtheria toxoid enhances the antibody response of the latter because of

a. Exotoxin of Bordetella organism
b. Additive action of two antigens
c. Formation of local granuloma
d. Endotoxin of Bordetella organism

377. 8 months old child has history of unusual crying and convulsions following previous vaccinations after BCG, DPT, and OPV and Hep B, now parents have brought child for next dose of vaccination. Which vaccine is contraindicated in this situation?

a. Measles b. DPT
c. Hep B d. DT

378. Storage temperature of vaccine is:

a. -4°C to 0°C
b. 0°C to 4°C
c. +2°C to 8°C
d. +4°C to 12°C

379. Yellow fever vaccination starts protection after how many days of infection:

a. 5 days b. 10 days
c. 15 days d. 20 days

380. Ring vaccination is:

a. Given by ring shaped machine
b. Given to produced ring shaped lesion
c. Given around 200 yards of a cases detected
d. Given around a mile of a case detected

381. In pulse polio immunization programme, VVM to maintain the cold chain which of the following indication to discard the vaccine is?

a. Inner square is white
b. Inner square is lighter than outer circle
c. Inner square darker than the outer circle
d. Outer circle is more dark than inner square

382. Freeze dried vaccine is:

a. BCG b. Rabies
c. DPT d. Hepatitis B

383. Which of the following is not a killed vaccine:

a. DPT b. Rabies
c. Hepatitis B d. Rubella

384. Human immunoglobulin is given in all except :

a. Rabies b. Hepatitis B
c. Measles d. Chickenpox

385. Mg2+ ion is used as an stabilizer in:

a. OPV b. DPT
c. BCG d. Measles

376. b	377. b	378. c	379. b	380. c	381. c	382. a	383. d	384. c	385. a

Preventive Aspects of Communicable Diseases – Explanations

BASIC CONCEPTS

236. C. Measles is more infectious than mumps

Public Health Significance:

- Measure of person to person spread/ communicability of disease
- Measures the infectivity of agent & effects of prophylactic agent

237. D. Secular trends

Trends of Disease:

- Secular/ Long term: gradual increase/ decrease in number of cases as compared to previous years
  - Best demonstrated by line graph
  - Disease showing: NCDs, TB, Typhoid
- Periodical: aseptic meningitis (yearly)
- Seasonal
  - Due to environmental factors
- Cyclical trend:
  - Influenza
  - Type A epidemic – every 2 -3 years
  - Type B epidemic – every 4 – 7 years
  - Type A pandemics – every 10 – 15 years
  - Because time is required for build up of susceptible population for disease to attack (due to variations in levels of herd immunity)

238. C. Person -to-Person transmission

Common exposure Point source	Propagated
• Rapid rise and rapid fall (explosive) • No secondary wave • All cases in One IP as there is brief exposure • Clustering of cases	• Slow rise and slow fall (only when no. of susceptible is depleted/ there is no more exposure) • **Secondary wave present** • **More than One IP**
• Eg. Bhopal gas tragedy • Minamata disease • Chernobyl gas disaster • Food poisoning	• **Herd immunity plays an important role in such type of epidemic** • **Eg. Hepatitis A, Polio**

239. B. Anthropozoonoses

Anthropo-zoonoses	Zoo-anthroponoses	Amphixenoses
Lower vertebrate to man from	man to lower vertebrate	Infection maintained in both man & lower vertebrate
Rabies, Plaque, Anthrax, Hydatid disease, Trichinosis	Human TB in cattle	Trypanosoma cruzi Schistosoma

240. B. Is constantly present in a given population group

Endemic disease refers to the constant or Usual or expected presence of a disease or infectious agent within a given geographic area or population

241. C. Epidemic

Sporadic: Scattered about/ Haphazard/ irregular pattern

242. C. Epidemic

Pandemic: Epidemic in a larger area involving > 1 WHO region. Ex: HIV

243. D. To estimate the fatality of the disease

Passive surveillance	Active surveillance	Sentinel surveillance
Data is itself reported to the health system	**Active collection of data**	• To identify the missing cases • To estimate total disease burden • To provide for trends

Inexpensive & easy	More accurate	
Most of the health programmes	Leprosy, stool sample collection from home in polio program	NACO
Malaria & Blindness		

244. D. Communicability

- Infectivity: Number infected/ Number exposed
- Pathogenicity: Number of diseased/ Number infected
- Virulence: Number of serious condition & mortality/ Number of diseased
- Communicability: Ability of an infectious agent to invade & multiply in a host

245. B. Rabies

For rabies we follow the modified thai red cross regimen for post exposure prophylaxis

246. A. Rabies

Subclinical infection is not seen in rabies, tetanus, measles & rubella and there fore there is no iceberg phenomenon & no screening also

247. C. Exotic disease

Exotic diseases are those which are imported into a country in which they do not otherwise occur. Example: rabies in the UK, yellow fever in India

248. B. Coccidiomycosis

Reservoir of Important Infectious Disease

Reservoir	Disease
Human	Epidemic typhus, Dracunculiasis, Ancylostomiasis, Trench fever, Ascarasis
Rodents	Endemic typhus, Indian tick typhus, RMSF, Rickettsial pox
Non Living	Soil harbours tetanus, anthrax, coccidiomycosis, Mycetoma

249. B. Median incubation period

Median IP is calculated from epidemic curve

250. D. 100%

SAR =

No. of exposed persons developing the disease within the range of the incubation period x 100

Total number of exposed susceptible contacts

$$SAR = \frac{2 * 100}{(3-1)}$$

251. D. 67 %

SAR =

No. of exposed persons developing the disease within the range of the incubation period x 100

Total number of exposed susceptible contacts

$$SAR = \frac{26 * 100}{100- 60 - 1} = 26/ 39 = 67\%$$

252. B. The interval of time between the receipt of infection by host and maximal infectivity of the host

Time Periods in Infectious Disease

- Serial interval:
- the gap in time between onset of primary & secondary cases
- Infectious (communicable) period:
- length of time a person can transmit disease
- Incubation period: E → Development of disease.
- Latent period: E → Onset of infectiousness
- may be shorter or longer than the incubation period
- Generation time: E → Maximal infectivity of the host
- Window Period: E → Lab detection of disease

253. A. Seasonal variation of disease occurrence may be related to environmental conditions

Seasonal trends of disease is commonly seen in diarrhoea which is more common in rainy season; common cold in winters

254. C. Cyclo developmental transmission

Types of Transmission

Transmission	Definition (always changes in vector body)	Examples
Propagative	**Disease agent only propagates**	• Plaque bacilli in rat fleas • Yellow fever virus in aedes
Cyclo-propagative	**Disease agent undergoes both cyclical & propagates**	Malarial parasite in anopheles
Cyclo-developmental	**Disease agent undergoes only cyclical**	• Filarial parasite in culex • Guinea worm embryo in cyclopes

255. D. Typhoid

Diseases Communicable During IP

- Measles
- Chicken pox
- Whooping cough
- Hepatitis A

256. B. Reservoir and source of infection are synonymous to host

Reservoir	Host
Animate/ Inanimate	Animate
Reservoir: Infectious agent lives & multiplies, depends primarily for survival & reproduces itself Source of Infection: in such a manner that it can be transmitted to susceptible host	Allows lodgment to an infectious agent under natural conditions

257. D. Infectious disease are not communicable during IP

Importance of Incubation Period

- Tracing the source of infection & contacts
- Period of quarantine = Max IP
- Area is declared free of epidemic/ period of surveillance: No case for 2 IP
- Identification of type of epidemic
- Prognosis
- Immunization
- Period of Isolation is not determined by IP
- Generally diseases are not communicable during IP except Measles, Chicken pox, Whooping cough & Hepatitis A

258. A. Cholera

Types of Carrier:

- Incubatory: Who shed the infectious agent during IP
- Mumps, measles, influenza, polio, pertussis, diptheria, hepatitis B
- Convalescent: Who shed the infectious agent during recovering from illness
- Typhoid, Amoebic dysentry, cholera, pertussis, diptheria
- Healthy: arise from sub clinical infection
- Polio, Cholera, Meningococcal meningitis, Salmonella, Diptheria
- Long term carrier: Typhoid Mary, Malaria
- Paradoxical: carrier who gets infected from another carrier

259. B. T.B.

Period of Isolation

Disease	Duration
Chicken Pox	6 days after onset of rash
Measles	Onset of catarrhal to 3rd day of rash/ 7days after rash onset
German measles	None (except in 1st trimester)
Influenza	3 days after onset
TB	Until 3 weeks of chemotherapy (not practised now)
Cholera, Diptheria	3 days after tetracycline started
Herpes zoster	6 days after onset of rash

Disease	Duration
Mumps	Until swelling subsides
Pertussis	3 to 4 weeks or until paroxysms cease
Meningococcal meningitis, Streptococcal pharyngitis	Until 1st 6 hours antibiotics completed

260. B. Maximum incubation period

To Prevent Spread of Disease

Properties	Quarantine	Isolation
Separation of	Healthy contacts	Cases
Done for	Other persons around	Cases themselves
Prevention	Primary (specific protection)	Secondary (treatment)
Duration	Till Max. IP	Till period of communicability

261. C. Index case

Types of Cases

- Primary: The person who comes into & infects a population is the primary case
- Index case: 1st comes into light
- Secondary Case: Those who subsequently contract the infection are secondary cases

262. B. To find out time for isolation

IP is from point of exposure to clinical symptom & isolation is done for cases so isolation has no relation with IP

263. C. Malaria

In malaria chronic carrier stage is seen even till 2 years

264. D. Rabies, tetanus

Dead end Host: intermediate host that doesn't allow transmission to definitive host (preventing parasite from completing its development). Example: Echinococcus canine tapeworms, Rabies, Tetanus, JE

265. B. Tetanus

Herd Immunity

- Def: Resistance of a group of people to an attack by a disease to which a larger proportion of members of the group are immune
- MOA: Infected person is not able to come in contact with a person who is susceptible
- %age of immunised population: varies from disease to disease
- Measles = 94%
- Polio vaccine: 90%
- Diphtheria: 70%
- Public Health Significance: Immunization programme

266. B. Paradoxical carrier

Paradoxical: carrier who gets infected from another carrier

267. B. Measles

Measles, rabies & tetanus have no carrier state

268. A. Malaria

Types of Host

Disease	Primary	Secondary
Taperworm (T. saginata)	Man	Cattle
Taperworm (T. solium)		Pig
Guinea worm		Cyclopes
Filaria		Culex
Sleeping sickness		Tse tse fly
Malaria	Anopheles	Man
Hydatid cyst	Dog	Sheep, cattle, man

269. C. No new case reported for twice the incubation period of disease since the last case

Area is declared free of epidemic/ period of surveillance: No case for 2 IP

270. B. Confirmation of existence of an epidemic

Epidemiology Investigation

Is there an epide1:nic?
↓
Yes
↓
What is the population at risk?
↓
What is the mode of transmission?
↓
What is the Possible etiology?
↓
What is the attack rate?
↓
What is the spectrum of disease?
↓
What is the incubation period?
↓
What are the methods to control or to eliminate the epidemic?
↓
How effective are the control procedures?

271. B. It is likely to be more for infection that do not have a sub clinical phase

More for infections where there is a sub clinical phase

272. C. 1,2 and 4 are correct

Control: Decrease in incidence & prevalence of disease. Mainly done by primordial & primary prevention. It reduces incidence, duration of disease, effects of infection, financial burden to community

273. A. There is complete interruption of disease transmission in the entire area of the community

Elimination	Eradication
When disease transmission has been stopped (preventing chain of transmission totally) but the **disease agent persists** **Zero incidence in a given area**	Absolute process, an "all or none" phenomenon, restricted to termination of infection from the **whole world**

274. D. Measles

- Small pox eradication date: 08/05/1980
- India polio free from 27/03/2014
- No case from 13/01/2011
- Eliminated diseases from India:
- Yaws and Maternal Neonatal Tetanus (on 14th July 2016)
- India is the first country to eliminate yaws under 2012 neglected tropical diseases
- Leprosy: 2017 (now revised again to 2017 as large number of cases were reported in Rapid survey of 2016)
- Guinea worm: February 2000
- Next diseases likely to be eliminated in India: Kala azar, Filariasis, Measles, Malaria
- 3 diseases targeted for eradication:
- Guinea worm, Polio, Measles

275. A. Small pox

Small pox is the only disease eradicated from the world

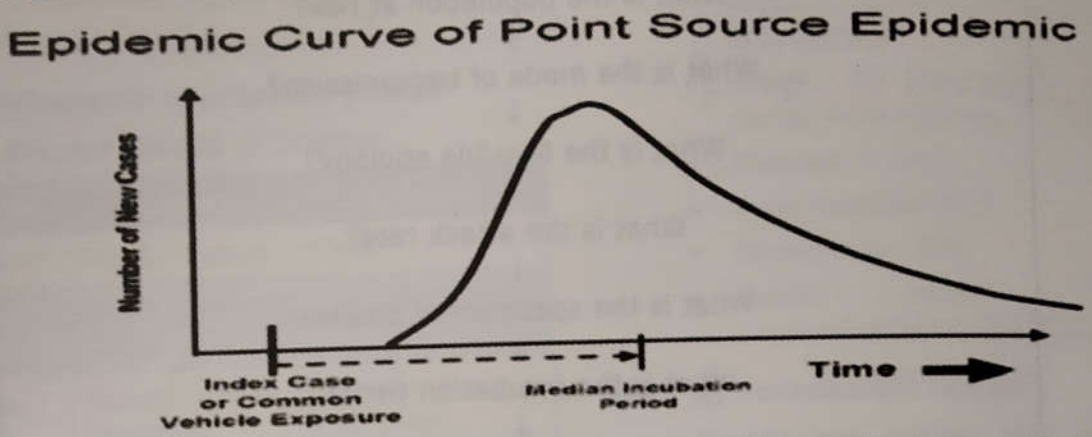
276. C. Propagated epidemic

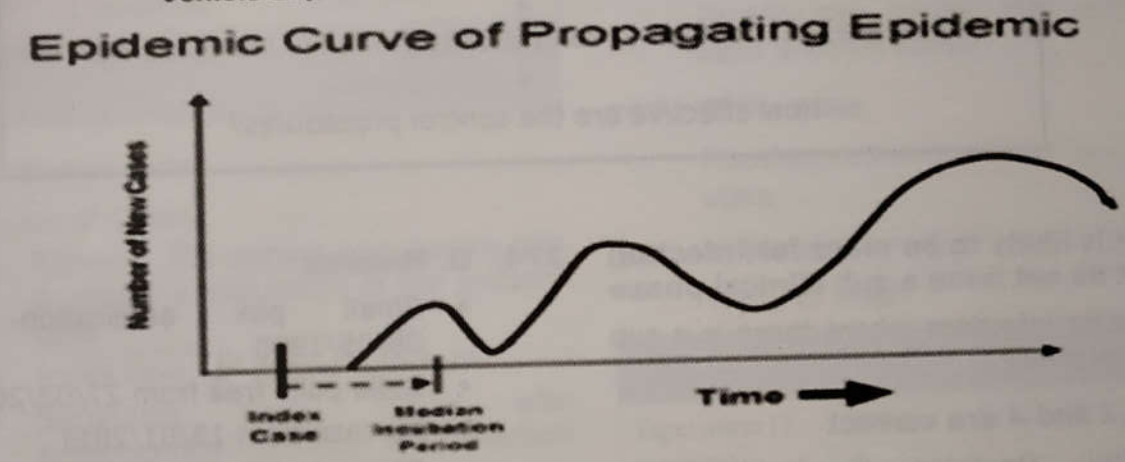
Hepatitis & Polio are propagated epidemics typically

277. D. Multiple source for prolonged period

IP of hepatitis A is 28 days (period given in the question is June to August is 90 days; maximum cases in July) so 3 times the IP (multiple sources); prolonged period

278. B. Point source epidemic


Epidemic Curve of Point Source Epidemic
Number of New Cases
Index Case or Common Vehicle Exposure
Median Incubation Period
Time



279. A. Elimination

Elimination	Eradication
When disease transmission has been stopped (preventing chain of transmission totally) but the disease agent persists Zero incidence in a given area	Absolute process, an "all or none" phenomenon, restricted to termination of infection from the whole world

280. A. Elimination of disease

Elimination refers to zero incidence in an area

281. A. Tuberculosis

TB has non human reservoirs also so can't be eradicated

282. C. Sentinel surveillance

Sentinel surveillance is used to search for missing cases

283. C. Effective sanitary surveillance

Environmental surveillance is used for sanitary surveillance

284. A. Man

Hookworm:

- Reservoir: Man
- Source: Soil

285. C. TB

TB is notifiable in India only

INDIVIUDAL INFECTIOUS DISEASES PREVENTION

RESPIRATORY INFECTIONS

CHICKEN POX

286. B. 6 days after onset of rash

Disease	Period of Communicability
Chicken pox	1- 2 days before to 4- 5 days after appearance of rash (Patient ceases to be infectious once lesions have crusted)
Measles	4 days before to 5 days after appearance of rash (Highly infectious during pro dromal stage & during eruption, period of communicability decreases after rash appears)
Diptheria	14- 28 days from disease onset
Rubella	1 week before to 1 week after rash onset (Max. When rash is erupting)
Mumps	4- 6 days before onset of symptoms & a week thereafter
Influenza	1- 2 before & 1- 2 days after onset of symptoms
Whooping cough	1 week after exposure to 3 weeks after onset of paroxysmal stage (catarrhal stage)

287. D. Cross resistance existed with animal pox

Epidemiological reasons for small pox eradication:

- No known animal reservoir
- No long term carrier state
- Infection provides lifelong immunity
- Case detection easy due to pathognomic rash
- Subclinical cases did not transmit the disease
- Vaccine – highly effective
- International level effort

288. D. 8th may 1980

- Small pox eradication date: 08/05/1980
- India polio free from 27/03/2014
- No case from 13/01/2011
- Eliminated diseases from India:
- Yaws and Maternal Neonatal Tetanus (on 14th July 2016)
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- Guinea worm: February 2000
- Next diseases likely to be eliminated in India: Kala azar, Filariasis, Mesles, Malaria

289. C. 90

SAR:

- 90%: chicken pox, rubella & whooping cough
- 80%: measles & meningococcal meningitis

MEASLES

290. C. Not infectious in pro-dromal stage

Measles if infectious from 4 days before to 5 days after appearance of rash

(Highly infectious during pro dromal stage & during eruption, period of communicability decreases after rash appears)

291. D. SSPE

SSPE (sub Sclerosing Pan Encephalitis)

- Develops 7- 10 years after measles infection
- Case fatality: 10- 20%
- C/f: progressive mental deterioration leading to paralysis (persisting viral infection)
- Frequency: 7 cases/ million cases of natural measles
- Others:
- Baby measles (exanthem subitum-roseola infantum), sixth disease (3rd day fever)

292. C. Secondary attack rate is less than that of rubella

Explanation for other options:

a. Measles virus survives outside the human body for days – can't survive
b. Carriers are important sources of infection – Measles have no carrier stage so no iceberg phenomenon & so no screening
c. Secondary attack rate is less than that of rubella
d. Incidence of measles is more in males than females – More in females

293. A. Koplik's spots appear as rash disappears

Mouth of a patient with Koplik spots, an early sign of **measles infection**. Three to five days after **symptoms** begin, a **rash** breaks out.

294. A. Man

Man is the single reservoir of measles

295. D. Catch up

WHO Measles elimination strategy: Supplementation Immunization Service

- **Catch up** –
- Nationwide vaccination campaign, targeting all children 9 months to 15 years (both India & WHO), irrespective of history of measles disease or vaccination status
- **Keep up** –
- Routine vaccination aimed at vaccinating each birth cohort
- **Follow up** –
- Subsequent nationwide vaccination campaign conducted every 2 – 4 years wherein all children born after catch up phase are given vaccine

296. B. Secondary bacteria infection

Common complications

More common complications of measles include:

- diarrhoea and vomiting, which can lead to dehydration
- middle ear infection (otitis media), which can cause earache
- eye infection (conjunctivitis)
- inflammation of the voice box (laryngitis)
- infections of the airways and lungs (such as pneumonia, bronchitis and croup)
- fits caused by a fever (febrile seizures)

Uncommon complications

Less common complications of measles include:

- liver infection (hepatitis)
- misalignment of the eyes (squint) if the virus affects the nerves and muscles of the eye
- infection of the membranes surrounding the brain and spinal cord (meningitis) or infection of the brain itself (encephalitis)

Rare complications

In rare cases, measles can lead to:

- serious eye disorders, such as an infection of the optic nerve, the nerve that transmits information from the eye to the brain (this is known as optic neuritis and can lead to vision loss)
- heart and nervous system problems
- SSPE – MOST RARE BUT MOST SERIOUS

297. B. 3

Preventive Strategy:

Vaccine: within 2 days of exposure

(Measles Ig no more used)

298. D. 95

Herd Immunity

Diphtheria	70%
Polio	90%
Measles	95%

299. C. 21 days

Incubation period of Respiratory Infection

Disease	Incubation period
Small pox	7 to 14 days
Chicken pox	14 to 16 days
Measles (Rubeolla)	10 to 14 days
Rubella (German measles)	14 to 21 days

Mumps	14 to 21 days
Influenza	18 to 72 hours
Diphtheria	2 to 6 days
Pertussis (Whooping cough)	7 to 14 days
Meningococcal meningitis	3 to 4 days
SARS	3 to 5 days
Tuberculosis	Weeks to years

300. A. Both active and passive immunization are given simultaneously

Now there is no role pf passive immunization in measles any more

301. C. Give again at 9 months of age

Irrespective of previous dose for measles; the vaccine needs to repeated as per the immunisation schedule that is at 9 months of age

RUBELLA

302. A. Women 15-49 years

Priority for Rubella vaccination

- 1st priority – 15 – 34/ 39 years reproductive age females
- 2nd – all children 1 – 14 years age
- 3rd – Routine immunization to all children aged 1

DIPHTHERIA

303. B. Daily throat examination

Diphtheria Control:

- Cases:
- Diphtheria antitoxin
- Penicillin/ Erythromycin
- Carriers: Erythromycin
- Contacts: should be throat swabbed & immunity tested
- Primary immunization or booster < 2 years: No action
- Primary immunization or booster > 2 years: Booster DT
- Non-immunized close contact:
- Daily throat swab culture
- Prophylactic penicillin/ erythromycin
- Antitoxin
- DPT/ DT (full course)

MENINGOCOCCAL MENINGITIS

304. B. Young adolescent

- Killed vaccine, 0.5 ml, subcutaneous
- **Available for group A, C, W135 and Y, Not available for group B** (B polysaccharide is non-immunogenic)
- Immunity lasts for 3 years, so booster every 3 years
- C/ I: Pregnancy, Infants and children < 2 years
- Recommended (India)– Haj pilgrims
- Indications of vaccine (in other countries)
- All adolescents 11- 12 years of age (1st dose at this age group then followed by booster at 16 years of age) (MOST IMPORTANT)
- Adolescents 13- 18 years
- 19- 21 years
- 2 years & above (splenectomized/ chronic disease/ lab workers/ travelers to endemic regions)

305. D. Ceftriaxone

Chemoprophylaxis

Disease	Chemoprophylaxis
Cholera	Tetracycline
Bacterial conjunctivitis	Erythromycin
Diptheria	Erythromycin
Influenza	Oseltamavir> Amantadine
Malaria	< 6 weeks (doxycycline, chloroquine), > 6 weeks (mefloquine)
Meningococcal meningitis	Ceftriaxone (earlier rifampicin)
Plaque	Tetracycline

TUBERCULOSIS

306. C. Identify new converters to Tuberculin test

Annual Risk of TB Infection (ARTI)/ Tuberculin Conversion Index (TCI)

- Defn: Proportion of population which will be primarily infected with TB in course of 1 year
- Importance:
- Indicates incidence of TB infection
- Best indicator of trend of TB affected by current control measures
- Most informative index of magnitude of TB problem
- ARTI in India = 1- 2%
- For every 1% rise of ARTI, there are 50 SS + ve cases/ lac population

307. A. < 1 % in 0-14 group of children

Control of TB:

- Prevalence of TB infection (ARTI) in children of age group 0- 14 years 1%
- Currently in India this is 40%

308. C. Tuberculin test

For infection it is tuberculin/ Mantoux test; for disease it is sputum smear & CXR

309. C. Bangalore

National Institute for Research in Tuberculosis is in Chennai

310. A. Incidence of infection

Annual Risk of TB Infection (ARTI) indicates incidence of TB infection

311. A. 133 per 100,000

Incidence= $\frac{\text{Number of new cases} \times 1000}{\text{Population at Risk}} = \frac{22 \times 1000}{16500 - 220} = 133$

312. D. Social and environmental factors

Thomas McKeown (1912–1988) was a British physician, epidemiologist and historian of medicine. Largely based on demographic data from England and Wales, McKeown argued that the population growth since the late eighteenth century was due to improving economic conditions, i.e. better nutrition, rather than to better hygiene, public health measures and improved medicine

313. D. INH 10 mg/kg for 6 months

Chemoprophylaxis in Children (< 6 years) who come in Contact with Sputum Positive TB

If	And	Then
Symptoms of TB	Clinician declares TB	Drug sensitive regimen
No symptoms of TB	Tuberculin test not available	INH 10mg/ kg * 6 mths
	Tuberculin test available	INH 10 mg/ kg * 3 months, then do test If induration < 6 mm, stop INH, Give BCG If induration > 6 mm, continue INH for 3 months

314. C. 5

Factual question

315. C. For assessing rifampicin resistance

Gene XPERT is CBNAAT (Cartridge Based Nucleic Acid Amplification Technique) which diagnoses rifampicin resistance in 90- 120 minutes (doesn't tell about MDR as MDR includes H & R resistance both)

316. C. 10,000

Factual question

317. C. Withhold breastfeeding

In India there is no contraindication for breast feeding

GASTROINTESTINAL INFECTIONS

POLIO

318. B. Last polio case in India was reported in 13 january 2011

India was awarded the polio free certificate in 2014 as for three years no cases of polio were seen

319. D. mVDPV

C stands for circulating, i for immunocompromised & a for ambiguous

320. A. Sri lanka

Three countries globally wild polio virus is endemic that is Pakistan, Afghanistan & Nigeria

321. C. Serotype 3

	VAPP (Vaccine Associated Paralytic Polio)	VDPV (Vaccine Derived Polio Virus)
Number	Rare	Rarer
Dangerous	Less because no outbreaks	More as outbreaks (cVDPV)
Strain	Type 3	Type 2
Caused by	OPV being a LA mutates into infective form in GI	When RI/ SIA coverage is poor
Prevention	Stop OPV & shift to IPV (2018)	Switch (tOPV to bOPV) (2016)

CHOLERA

322. D. 24 hours

ORS powder is dissolved in 1 litre of water and to be consumed in a span of 24 hours

323. D. Safe water and sanitation

Cholera Control

- Verification of diagnosis
- Identifying V cholerae in stools of few patients (not all)
- Notification
- Cholera – a notifiable disease (24 hours to WHO)
- Treatment:
- Rehydration therapy
- Antibiotics (no anti diarrhoeals, anti spasmodics, anti emetics)
- Stool disinfection: best by cresol
- Chemoprophylaxis
- Mass chemoprophylaxis: not recommended for total community
- **Recommended for household contacts or closed community**
- Health education – **Most effective** prophylactic measure
- Safe water & sanitation

324. D. Azithromycin

Life stage	Treatment
Children	Azithromycin
Adult	Doxycycline
Pregnancy	Azithromycin
Chemoprophylaxis	Tetracycline

325. A. Mass chemoprophylaxis

Mass chemoprophylaxis is no more recommended for cholera control

326. D. Total osmolarity - 300 mmol

WHO/UNICEF ORS

Ingredient	g/L
Sodium chloride	2.6
Potassium chloride	1.5
Glucose, anhydrous	13.5
Trisodium citrate dihydrate	2.9
Total	20.5

ORS Osmolalities

Particle	mmol/L
Sodium	75
Potassium	20
Glucose	75
Chloride	65
Citrate	10
Total	245

TYPHOID

327. B. Male carriers though less are more dangerous

Explanation for Other Options

a. Female carriers are less common – more common

c. Gall bladder usually no involved in carrier state – Gall bladder is the predominant site where the bacteria stays

d. Tetracycline is the DOC for carriers – Ampicillin/ amoxycillin is the DOC

328. A. Ampicillin

Ceftriaxone is used for treatment but ampicillin/ amoxycillin is used for carriers

329. A. 1, 3 , 5 days

Typhoid oral vaccine (Ty21a) is given- on day 1, 3, and 5, once every 3 years, protection for 3 years

330. C. Till 3 stool test are negative

Isolation – till 3 bacteriologically negative stools & urine reports on 3 separate days

DRACUNCULIASIS

331. B. Niridazole prevents transmission of the disease

Niridazole is used (but not officially recommended) for the treatment of schistosomiasis, dracunculiasis and tungiasis. ... The major action of **niridazole**seems to be on the glycogen metabolism of the helminths. The drug also case structural damage to the reproductive system of female schistosomes.

332. C. Monitoring mass treatment of community

Chandler's Index

- Average number of hookworm eggs per grams of feces
- Interpretation – kato-katz technique
- > 300 eggs/gram of stool – important public health problem
- < 200 eggs/grams – not much significance

333. B. DDT

DDT has no role to play in dracunculiasis control; chlorination more than 5 ppm is the control strategy

334. A. Step wells

When the feet enters the water dracunculiasis spreads which occurs while collecting water using step wells

335. B. Rajasthan

Jodhpur was the last town from which Dracunculiasis has been eliminated

VACCINES

NOTE – ALL THE ANSWERS ARE AS PER NATIONAL IMMUNIZATION SCHEDULE 2018 GUIDELINES GOVT OF INDIA

336. D. Live vaccine contains both major and minor antigens

Explanation for other options:

a. Two live vaccine cannot be administered simultaneously – new guidelines any number of vaccines can be administered simultaneously but at different sites

b. Booster doses are not required when live vaccines are administered - in OPV it is required as there are multiple strains of OPV & each dose of OPV provides immunity against one strain only

c. Can be given to pregnant females – generally live vaccines are contraindicated in case of pregnancy

337. C. Danish 1331

Vaccine strains

- **Measles – Edmonston Zogreb Strain**
- **Typh-Oral – Ty21a Strain**
- **Chicken Pox – OKA Strain**
- **Rabies – Pitts Moore Strain**
- **BCG – Danish 1331**
- **Polio – Lancing, Leon, Brunhilde Strain**
- **Mumps- Jeryll Lynn Strain**
- **Yellow Fever- 17 D vaccine Strain**
- **Hep A – HM175/GBM strain**
- **Rubella- RA 27/3 Strain**
- **Diphtheria- Park Williams 8 Strain**
- **japanese encephalitis: SA 14-14-2, beijing and nakayama strains**

338. B. Polio

Vaccines sensitive to heat

- BCG (after reconstitution)
- OPV
- IPV
- Measles, MR
- Rotavirus
- JE
- DPT
- BCG (before reconstitution)
- TT
- Penta, HepB, PCV

Vaccines sensitive to freezing

- HepB
- PCV
- Penta
- IPV
- DPT
- TT

In the question since they have given just BCG we take it as before reconstitution

339. B. BCG DPT - 1 OPV measles vitamin A

9- 12 months totally unimmunized

- On same day
- On recommended sites
- Using different syringes
- If > 1 injection has to be given on 1 limb; then ensure distance between 2 injection sites to be 1 inch apart
- MR
- JE
- BCG
- OPV
- IPV
- PCV
- ROTA
- HEPB
- VITA
- PENTA

340. D. WHO recommends Danish 1331 strain for vaccine production

Explanation of other options:

a. Distilled water is used as diluent for BCG vaccine – normal saline is used

b. Site for injection should be cleaned thoroughly with spirit – not done as the spirit kills the live attenuated vaccine strain

341. B. DPT-1, OPV-1, Vitamin A

1- 5 years totally unimmunised

- Don't Give
- BCG
- IPV
- ROTA
- HEPB
- PENTA

1ST visit		2ND visit		3RD visit		4TH visit
DPT 1	After 1 month Interval	DPT 2	After 1 month Interval	DPT 3	After 6 months Interval	DPT Booster
OPV 1		OPV 2		OPV 3		OPV Booster
M/ MR 1		M/ MR 2				
JE 1						
VIT A						

342. A. Salk polio

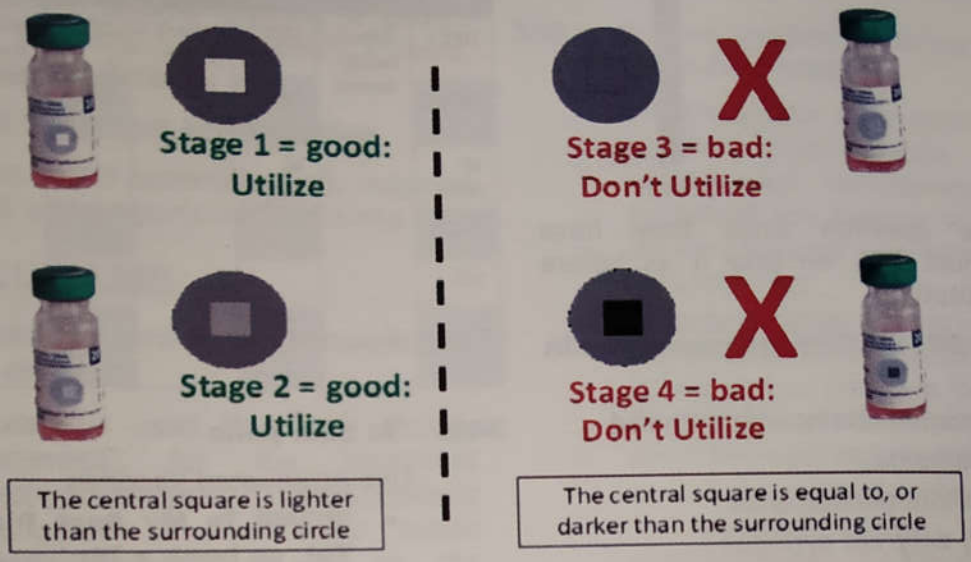
Live Attenuated Vaccines

- **'ROME Is My Best Place To go Yet, so book a JEt '**
- Rubella, ROTAVIRUS
- Oral polio vaccine (OPV)
- Measles
- Epidemic typhus
- Influenza
- Mumps
- BCG
- Plague
- Typhoid oral vaccine
- Yellow fever
- JE

Killed	Toxoid	Polysaccharide	Recombinant
Typhoid	Diptheria	Pneumococcal	HBV
Cholera	Tetanus	Meningococcal	HPV
Plaque	Anthrax		Lyme disease
Pertussis			
IPV			
Rabies			
JE			
HAV			

343. D. Change in colour of monitor on vaccine vial

Vaccine Vial Monitor


Stage 1 = good:
Utilize
Stage 3 = bad:
Don't Utilize
Stage 2 = good:
Utilize
Stage 4 = bad:
Don't Utilize
The central square is lighter than the surrounding circle
The central square is equal to, or darker than the surrounding circle

344. C. Presence of acellular pertussis increases its immunogenicity

Acellular pertussis is given in place of whole bacteria as whole cell is related to neurological side effects

345. C. Dial thermometer

Temperature is measured twice a day using dial thermometer

346. D. Sub centre & village level

Maximum damage to vaccine occurs due to improper storage which is seen at the lowest level

347. C. Give 3rd dose and continue the course

There is no need to restart the schedule; and since DPT & OPV can be given after 1 year also so 3rd dose is given

348. A. Only DPT

5 to 7 years of Age Completely Unvaccinated

1ST visit		2ND visit		3RD visit		4TH visit
DPT 1	After 1 month Interval	DPT 2	After 1 month Interval	DPT 3	After 6 months	DPT Booster

349. D. Half used vials should not be put back into the cold chain after the session

DPT vaccines which are left over can be reused if stored properly (DPT follows the open vial policy)

350. A. Rubella

Out of the vaccines given in the options; only rubella is the live attenuated vaccine

351. D. Aluminum

Substance	Vaccine	Role
Magnesium Chloride	OPV	Stabilizer
Aluminium hydroxide	DPT	Adjuvant
Thiomersal	DPT	Preservative

352. B. Sabin polio vaccine

OPV is related to VAPP & VDPV

353. D. HIB

Age	Schedule	Changes
At birth	BCG, OPV 0, Hep B 0	None
6 weeks	DPT 1, Hep B 1, OPV 1	• In place of DPT 1, HepB 1 - Pentavalent 1 is given • Rota 1 has been added in few states • IPV 1 (id 0.1ml has been added in few states)
10 weeks	DPT 2, Hep B 2, OPV 2	• In place of DPT 2, Hep B 2 Pentavalent 2 is given • Rota 2 has been added in few states
14 weeks	DPT 3, Hep B 3, OPV 3	• In place of DPT 3, Hep B 3 Pentavalent 3 is given • Rota 3 has been added in few states • IPV 2 (id 0.1ml has been added in few states)
9 months	Measles, Vitamin A	JE 1, Measles & Rubella
16- 24 months	DPT booster, OPV booster, JE 2	Measles 2nd dose/ Measles & Rubella
5 years	DPT booster	No more OPV booster

354. D. Intradermally

- Administered in
- left upper arm: BCG & JE
- right upper arm: M/MR & IPV
- intradermally: BCG & IPV
- orally: OPV & Rotavirus
- subcutaneously: M/MR & JE
- Injectable vaccines do not have a dose of 0.5 ml:
- BCG: 0.1 ml (0.05 ml up to 1 month age)
- IPV: 0.1 ml

355. C. Two live vaccines cannot be given simultaneously

New guidelines; any number of vaccine can be given together simultaneously but at different sites

356. B. OPV

OPV is the only vaccine out of the options which can be frozen

357. A. It is killed vaccine

OPV is a live attenuated vaccine

358. B. Measles

Out of the options given measles vaccine has maximum efficacy

Vaccine	Effectiveness	Comments
Chickenpox (varicella)	95% or higher.[3]	
Diphtheria	Over 95%[4]	
Hib	Over 95%5	
Hepatitis A	Over 90%[6]	
Hepatitis B	Over 95%[7]	
Measles	90-95% with one dose, higher with two[8]	
Mumps	78%[9]	Protection may wane ten years after the second dose.
Pertussis (whooping cough) acellular vaccine[10]	Around 75-80%	Protection wanes 3-5 years after last dose, booster needed.
Pneumococcal	Over 95%11	Conjugate vaccines, for invasive disease from the types covered by the vaccine.
Polio	Over 95%[12]	Inactivated Polio Vaccine-IPV
Rotavirus	Over 85-98% against severe disease[13]	
Rubella	Over 95%[14]	
Tetanus	Over 90%[15]	Estimate based on studies of neonatal tetanus and impact of the vaccine on the disease in the real world.

359. C. 5

OPV is given at birth, 6, 10, 14 weeks and OPV booster at 16- 24 months

360. C. Neomycin is used as preservative in BCG vaccine

Measles: Stabiliser - Sorbitol, Hydrolyzed gelatin, Neomycin

DPT: AlPO/ AlOH (adjunavt: increasing immunogenicity of vaccine); Thiomersal (preservative)

361. A. Measles vaccine

Guidelines of Vaccination in Elderly (CDC): Nothing in India

- Influenza i.m. inactivated vaccine (Live intranasal vaccine is C/I)
- Pneumococcal vaccine once
- dT booster every 10 years
- In selected patients > 60 years
- Herpes zoster (shingles)
- Hepatitis A
- Hepatitis B
- Meningococcal vaccine
- Varicella
- MMR
- Yellow fever vaccine (for travellers)

362. B. 4

Ice packs

- Prepared in deep freezer
- 320 ml capacity
- Horizontal mark: water filled, nothing to be added to water
- Has 2 holes for keeping reconstituted BCG & OPV
- Day carrier: 2 ice packs & vaccine carrier: 4 ice packs

363. C. Ice lined refrigerator

District/ Place of production	Cold Box used to transfer from DH to CHC/ PHC	CHC/ PHC	Vaccine carrier used to transfer from CHC/ PHC to sub centre	Sub centre (no vaccine storage)
Walk in cold rooms Large ILRs (240/ 300 litres)		Small ILR (140 litres)	Day carrier	Outreach
Store for 3 months		Store for 1 month		

364. D. DPT

DPT can be given maximum till 7 years; and so booster is given at 5 years of the age

365. D. 6-9 months

Minimum age when measles can be given is 6 months

366. B. Measles

Measles & BCG if used after 4 hours of reconstitution lead to TSS

367. D. 0, 7, 28 days

Pre- Exposure Prophylaxis:

- i.d. (0.1 ml) or i.m. (0.5 ml)
- 0 7 21/ 28 (days)
- booster not required until Ab titre ≤ 0.5 IU/ml otherwise given at an interval of 2 years

368. D. DPT + Vitamin A

Under the new immunisation schedule OPV booster is no more given at 5 years of life

369. A. Follow up of AFP every 30 days

AFP follow up is done after 2 months of onset of paralyis

370. B. P1 & P3

In 2016, type 2 strain was removed from the OPV as it was associated with VDPV (SWITCH)

371. B. Killed vaccine

Humans: SA 14- 14- 2

- 0.5 ml sc left upper arm
- Diluents: Phosphate buffer

372. B. Maternal antibody is completely protective

Maternal antibody is not protective against polio so OPV 0 dose is given at birth

373. C. Influenza

Influenza is a live attenuated vaccine which is given by nasal route

374. A. Children under 8 years

In the options provided B, C & D all are immune compromised patients so live attenuated vaccine would better be avoided in these patients

375. A. Improper storage

Improper storage at the village & sub centre level is the main reason of vaccine failure

376. B. Additive action of two antigens

Whole killed bacteria of Bordetella Pertussis has an adjuvant effect

377. B. DPT

Severe reaction in previous dose (screaming, fever> 40, neurological complications) is a contraindication of DPT : in such case give DT

378. C. +2°C to 8°C

Under the national immunisation schedule; the vaccines are stored at a temperature of + 2 to + 8° C

379. B. 10 days

Protection starts after 10 days but lasts for life long

380. C. Given around 200 yards of a cases detected

Ring vaccination is commonly done in case of polio, earlier done in cholera

381. C. Inner square darker than the outer circle

Outer circle, inner square

- Inner square is 10% of outer circle
- Made of heat sensitive material)
- In OPV, outer circle is blue & inner one is white

382. A. BCG

Out of the options given here; BCG is the freeze dried vaccine which is reconstituted

383. D. Rubella

Rubella is the live attenuated vaccine given in the options

384. C. Measles

Now we don't use immunoglobulins in case of measels

385. A. OPV

Magnesium chloride is used as a stabilizer in OPV.

386. Which one of the following statements about influence of smoking on risk of coronary heart disease (CHD) is not true?

a. Risk of death from CHD decreases from cessation of smoking
b. Filters in cigarette provide a protective effect for CHD
c. Influence of smoking is synergistic to other risk factors for CHD
d. Influence of smoking is directly related to number of cigarettes smoked per day

387. Clinical goal of cholesterol by HDL ratio recommended for CHD prevention is

a. Less than 3.5 b. VLess than 2.5
c. Less than 10.5 d. Less than 1.5

388. False about coronary heart disease:

a. Indian CHD occurs 1 decade later than western CHD
b. Heavy cigarette smoking is a risk factor
c. Males are affected more than females
d. DM predisposition to MI is seen

389. Modifiable risk factors for hypertension is:

a. Ethnicity b. Age
c. Sex d. Obesity

390. Tracking of BP implies

a. BP increases with age
b. BP decreases with age
c. BP of hypotensive become hypertensive
d. BP of hypotensive remain hypotensive

391. What is DASH diet?

a. Dietary Approaches to Stop Hypertension
b. Domestic Approach to Safeguard Hepatitis
c. Dietary Approaches to Stop Hyperlipidemia
d. Domestic Approaches to Stop Hypertension

392. Rheumatic heart disease can be prevented by

a. Screening of school going children
b. Vaccination against Streptococcus
c. Treatment of respiratory infections
d. All of these

393. Habits and customs are conductive to cancer as evident below except:

a. Kangri cancer in Kashmir due to hot pot in winter
b. Oral cancer due to pan chewing in India
c. Penile cancer and cervical cancer following circumcision
d. Lung cancer due to smoking

394. Which of the following is not a good candidate cancer for screening at community level?

a. Ca Lung b. Ca breast
c. Ca prostate d. Colonic cancer

395. Highest increase in survival rate is seen after screening of:

a. Carcinoma cervix
b. Carcinoma lungs
c. Carcinoma colon
d. Carcinoma breast

396. Maximum mortality in India among women is due to which carcinoma?

a. Lungs b. Cervix- uteri
c. Ovary d. Breast

397. Early warning signs of cancer that public should be aware include all except:

a. Persistent cough
b. Lump or hard area in breast
c. Unexplained weight gain
d. Change in wart/ mole

386. b	387. a	388. a	389. d	390. d	391. a	392. d	393. c	394. a	395. c
396. d	397. c								

398. All of the following sites are used for measuring skin fold thickness to assess obesity except:

a. Mid triceps
b. Biceps
c. Subscapular
d. Anterior abdominal wall

399. A patient is called obese in India if BMI is:

a. 20-30 b. > 25
c. > 30 d. > 40

400. Which of the following should be done to reduce obesity?

a. Regular exercise with same amount of food
b. Decrease fat intake but have stomach full
c. Reduce intake of fats, carbohydrates and protein
d. All the above

401. Which is the cut off level of waist hip ratio in women indicating abdominal fat accumulation?

a. 0.75 b. 0.85
c. 0.95 d. 1.05

402. BMI (body mass index) is defined as:

a. $\frac{\text{Weight (KG)}}{(\text{Height})^2 \text{ (meters)}}$
b. $\frac{\text{Weight (KG)}}{(\text{Height})^2 \text{ (cm)}}$
c. $\frac{\text{Mid arm circumference (CM)}}{\text{Head circumstance (CM)}}$
d. Mid arm circumference (cm) between ages of 1-5 years

403. Stanford - three- community study, North Karelia project and lipid research Clinics study are types of:

a. Cohort studies
b. Nested case control studies
c. Case series report studies
d. Risk factor intervention trials

404. Which one of the following is not a characteristic of non-communicable disease?

a. Well defined etiological agent
b. Multifactorial causation
c. Long latent period
d. Variable onset

405. 'Rule of halves' is seen in:

a. CHD
b. Hypertension
c. Blindness
d. Accidents & Injuries

406. The preferred public health approach to control non-communicable disease is:

a. Shift the population curve of risk factors by a population-based approach
b. Focus on high risk individuals for reduction of risk
c. Early diagnosis and treatment of identified cases
d. Individual disease abased vertical programmes

407. Accidents happening during weekends is:

a. Cyclic trends
b. Seasonal trends
c. Secular trends
d. Point source epidemic

408. Haddon matrix is related to:

a. Hypertensive disorders
b. Communicable diseases
c. Maternal & child mortality
d. Injury prevention

409. Lethal BMI cut-off in Males is:

a. 13 b. 12
c. 11 d. 10

410. Tobacco pack warning guidelines in India on both sides of the tobacco packet is:

a. 75% b. 85%
c. 95% d. 100%

398. d	399. c	400. a	401. b	402. a	403. a	404. a	405. b	406. a	407. b
408. d	409. a	410. b							

386. B. Filters in cigarette provide a protective effect for CHD

Filters in cigarette don't provide any protection; **Filters** do not block all the bad chemicals in smoke, and filtered smoke feels milder on the throat, making it easier to take bigger and deeper puffs. **Filters** only help block the largest tar particles, letting through smaller bits of tar that can travel deeper into your lungs

387. A. Less than 3.5

Health Diet: WHO Guidelines, 2015

	Adults	Cardiovascular Diseases
Total fat	< 30%	< 20%
Saturated fat	< 10%	< 7%
Sugar	< 50 gms/ day	< 30 grams/ day
Extra		Dietary cholesterol < 200mg per day Cholesterol/ HDL ratio < 3.5
Salt intake (iodised) < 5 grams		
400 gram (5 portions) of fruit & vegetables a day		

388. A. Indian CHD occurs 1 decade later than western CHD

Indian CHD occurs a decade earlier than western world

389. D. Obesity

A, B & C are non-modifiable; they are constant from birth

Hypertension Risk Factors	
Nonmodifiable Risk Factors	**Modifiable Risk Factors**
• Ethnicity (African Americans are at greater risk) • Increased age (>35 years) • Having a familial history of hypertension	• Being overweight or obese • History of smoking • High intake of dietary sodium • Excessive use of alcohol • Sedentary lifestyle • High level of stress • Poorly controlled diabetes

390. D. BP of hypotensive remain hypotensive

Tracking means people with low BP in childhood will have low BP in adults & those with high BP in childhood will have high BP when they grow up

391. A. Dietary Approaches to Stop Hypertension

DASH recommends eating plenty of vegetables, fruits, whole grains, fat-free or low-fat dairy products, fish, poultry, beans, nuts, and vegetable oils; limiting foods high in saturated fat (such as processed meat, full-fat dairy products, and tropical oils such as coconut and palm oils); and limiting sugar-sweetened beverages and sweets

392. D. All of these

a. Screening of school going children – Secondary prevention

b. Vaccination against Streptococcus – Primary prevention

c. Treatment of respiratory infections – Secondary prevention

d. All of these

393. C. Penile cancer and cervical cancer following circumcision

Circumcision reduces the risk of HPV infection and hence penile and cervical cancer

394. A. Ca Lung

Ca lung is screened using HRCT which is not feasible at the community level

395. C. Carcinoma colon

Carcinoma colon if screened using the blood in stools has the maximum survival benefits

396. D. Breast

(This data is revised on a yearly basis)

	India		World	
	Incidence	Death	Incidence	Death
Female	Breast> Cervix > Stomach	Breast> Cervix > Stomach	Breast> Colon > Lung	Breast > Lung > Colon
Male	Lung > Lip & oral cavity > Pharynx	Lung > Stomach > Oral	Lung > Prostate > Colorectal	Lung > Liver > Stomach
Source	Lancet Publication 11.09.2018		Global cancer observatory report 2018	

397. C. Unexplained weight gain

Warning signs for Cancer:

a. Change in bowel or bladder habits

b. A sore that does not heal

c. Unusual bleeding or discharge

d. Thickening or lump in the breast or elsewhere

e. Indigestion or difficulty in swallowing

f. Obvious change in a wart or mole

g. Nagging cough or hoarseness

398. D. Anterior abdominal wall

Skin fold thickness

- Rapid and non invasive method of fat assessment
- **Herpenden skin callipers** are used for estimating
- Measured at 4 sites – Mid triceps (single best site), mid biceps, subscapular, suprailiac

399. C. > 30

Nutritional status based on the WHO and "Asian criteria" values

Nutritional status	WHO criteria BIM cut-off	"Asian criteria' BIM cut-off
Underweight	<18.5	<18.5
Normal	18.5 – 24.9	18.5 – 22.9
Overweight	25 – 29.9	23 – 24.9
Pre-Obese		25 – 29.9
Obese	≥30	≥30
Obese Type 1 (obese)	30 – 40	30 – 40
Obese Type 2 (morbid obese)	40.1 – 50	40.1 – 50
Obese Type 3 (super obese)	>50	>50

400. A. Regular exercise with same amount of food

Fat intake is to be limited to < 30% of total diet for the day; but sedentary life style is a bigger reason for fat accumulation

401. B. 0.85

OBESITY CUTOFF'S

	Males	Females
Skin fold thickness	≥ 40 mm	≥ 50 mm
WHR	> 1	> 0.85
Waist Circumference	102 cm	88 cm
Waist Height Ratio (BEST – age & sex independent)	0.5	

402. A. Weight (KG) (Height)^2 (meters)

For Obesity assessment

- Quetelet Index, BMI = Weight (kg)/ Height(m ^{2})
- Ponderal Index, BMI = Height (cm)/ cube root of body weight (pounds)
- Or, = Weight * 100/ Height^3

- Broca index, Ideal weight = Height (cm) – 100
- Corpulence index = Actual weight/ Ideal weight (Normal <= 1.2)
- Lorentz formula, Ideal Weight = Ht (cm) – 100 – $\frac{\text{Ht (cm) – 150}}{\text{2 (women) or 4 (men)}}$

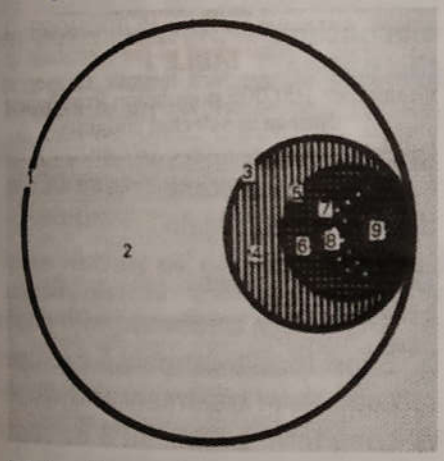
403. A. Cohort studies

These are classical cohort studies – Framingham heart study, Stanford heart prevention study, north Karelia study is a quasi-experimental study

404. A. Well defined etiological agent

NCDs have multifactorial causation with interaction of genetic, socio economic and environmental factors so we don't have defined etiological agent

405. B. Hypertension



50% of people know that they have hypertension, 50% of them consume medication, 50% of them, consume adequate medication.

406. A. Shift the population curve of risk factors by a population-based approach

a. Shift the population curve of risk factors by a population-based approach – primordial prevention (best of all the options given here)

b. Focus on high risk individuals for reduction of risk – primary prevention

c. Early diagnosis and treatment of identified cases – secondary prevention is less effective than primary & primordial

d. Individual disease abased vertical programmes – too costly and more over

NCDs have multifactorial causation

407. B. SEASONAL TRENDS

In weekend because of increased frequencies of drink driving the accidents occur more, this is a seasonal (weekend) trend.

Trends of Disease

- Secular/ Long term: gradual increase/ decrease in number of cases as compared to previous years
- Best demonstrated by line graph
- Disease showing: NCDs, TB, Typhoid
- Periodical: aseptic meningitis (yearly)
- Seasonal: Mainly due to environmental factors
- Cyclical trend:
- Influenza
- Type A epidemic – every 2 -3 years
- Type B epidemic – every 4 – 7 years
- Type A pandemics – every 10 – 15 years
- Because time is required for build up of susceptible population for disease to attack (**due to variations in levels of herd immunity**)
- In the pre vaccination era this was shown by measles and rubella also

408. D. INJURY PREVENTION

Haddon Matrix

	Host	Equipment	Environment Physical	Environment Social
Pre-Event				
Event				
Post-Event				

409. A. 13

Lethal BMI

M < 13; F < 11

410. B. 85%

In India the package warning guidelines is 85% on both sides; WHO recommends for 100% (plain packaging on both sides)

RNTCP

411. A 25-yr old female has been diagnosed to be suffering from tuberculosis categorized as drug sensitive previously treated. The new treatment regimen recommended is:

a. 2 (HRZE) + 4 (HRE)
b. 2 (HRSZE) + 1 (HRZE) + 5(HRE)
c. 3 (HRZE) + (HRZE) + 2 (HRE) + 4 (HR)
d. 3(HRSZE) + 1 (HRZE) + 6(HRE)

412. According to RNTCP, sputum sample for testing of TB are packed in two containers which are labelled as :

a. Alpha & beta b. 1 & 2
c. A & B d. Y & Z

413. A 26 years old male has symptom suggestive of TB. At DOTS clinic, he underwent 2 sputum examination. Only one of the sputum smears turns out to be positive. Next step of management will be:

a. He is declared a sputum smear + ve case: started with DOTS drug sensitive new case
b. He is declared a sputum smear -ve case
c. He will undergo sputum smear examinations after 12 months again
d. Drug resistant TB

414. Schedule for sputum examination for drug sensitive new patients is:

a. 2, 3 and 5 months
b. 2 & 6 months
c. 1, 3 & 5 months
d. 2, 5 & 7 months

415. Best indicator trend of TB affected by current control measures is:

a. Annual risk of TB infection
b. Prevalence of TB infection
c. % of primary drug resistance
d. % of Multidrug resistance

416. Under RNTCP, objective is achieve:

a. To detect 90% of estimated cases & then to achieve cure rate of 90%
b. To detect 90% of estimated cases & then to achieve a cure rate of 90% in drug sensitive new cases
c. To detect 70% of estimated cases & then achieve a cure rate of 90%
d. To detect 90% of estimated cases & then to achieve a cure rate 90% in drug sensitive previously treated

417. A adult male presented in OPD with complains of cough & fever for 3 weeks & sputum +ve. On probing it was found that he had already received RHZE for 2 weeks but had discontinued. How will you manage the patient?

a. As drug sensitive new case
b. As drug sensitive previously treated
c. As drug resistant
d. Investigate again

418. 'DOTS' indicates

a. Short term treatment with supervision
b. Short term treatment & no supervision
c. Long term treatment with supervision
d. Long term treatment & no supervision

419. True about RNTCP:

a. Active case finding
b. DOTS applied
c. Treatment is given only in smear positive case
d. General practitioners are restricted to give the treatment

420. A person with tuberculosis on domiciliary treatment is expected to do all except::

a. Dispose sputum safely
b. Use separate vessels
d. Collect drugs regularly
d. Report to PHC if new symptoms arise

411. a	412. c	413. a	414. b	415. a	416. b	417. a	418. a	419. b	420. b

POLIO

421. Pulse polio immunization is administration of OPV to :

a. All children between 0-5 years of age on a single day irrespective of their previous immunization status :
b. Children in the age group 0-1 year only who have not been immunized
c. Children in the age group of 12-24 months only as the booster dose
d. All children between 0-5 years of age, wherever there is outbreak

422. All are true regarding AFP surveillance except:

a. WHO recommends it for age less than 15 years
b. Two stool sample are collected per case
c. Non-polio AFP rate should be > 2 per 100000 among <15 yrs old
d. Adequate stool specimens should be taken from 100% AFP

423. In acute flaccid paralysis surveillance evaluation for residual paralysis should be done after:

a. 30 days b. 60 days
c. 90 days d. 120 days

424. Line listing of cases of Acute flaccid paralysis is done for all of the following reasons except:

a. To check for duplication
b. To document high risk groups
c. To confirm year of onset of illness
d. To identify high risk population

425. All are true regarding Acute flaccid paralysis in national polio eradication programme, except:

a. Acute flaccid paralysis in a child <15 years of age
b. All cases of AFP should be reported irrespective of diagnosis within 6 months of onset
c. Two specimen collected within 14 days of paralysis
d. 60 days follow up examination

RMNCHA

426. Data regarding recent trend of Immunization in community can be found by

a. Census data b. Rural survey
c. DLHS d. SRS

427. Screening test used in ANC mothers under RMNCH+A at level of subcenter is

a. HB
b. Rh
c. TSH
d. Urinary analysis for UTI

428. A 15 day old newborn suffering from cough, sneezing and fever needs medical help. Mother has no money for transportation to the hospital. Which of the following national health programme can help the women?

a. F-IMNCI b. JSSK
c. NSSK d. IGMSY

429. About ASHA true is all except :

a. They are preferably female
b. There is one ASHA worker per 800 population
c. ASHA is not a skilled birth attendant
d. Provides primary medical care for minor ailments

430. Under NRHM, lowest level at which health action plan is prepared is:

a. State level
b. District level
c. Sub centre level
d. Village level

431. All are included in NRHM except:

a. Strengthening of JSY
b. Formation of family health and social welfare societies
c. State and district health mission
d. Recruitment and training of ASHA

432. Resource persons for training of ASHA

a. Medical officer & ANM
b. Medical officer & Anganwadi worker
c. ANM and anganwadi worker
d. Medical officer

433. ASHA is recruited under :

a. NRHM
b. National urban health mission
c. ICDS
d. Village health system

421. a	422. d	423. b	424. c	425. b	426. c	427. a	428. b	429. d	430. c
431. b	432. a	433. a							

434. Janani Suraksha Yojana includes:

a. Tetanus immunization
b. Institutional deliveries
c. Iron supplementation
d. Abortions

435. NRHM was started in:

a. 2005 b. 2006
c. 2007 d. 2009

436. ASHA gets remuneration for all except:

a. Institutional delivery
b. Zero dose of OPV and BCG
c. Recording birth weight
d. Birth registration

437. All are true about JSSK except:

a. Free diet to mother during hospital stay
b. Free delivery
c. Free transport from home to hospital and back
d. Free treatment of child only up to 28 days

438. Elemental iron & folic acid content of adult tablets supplied under national program:

a. 60 mg of elemental iron and 500 micrograms of folic acid
b. 100 mg of elemental iron and 500 micrograms of folic acid
c. 120 mg of elemental iron and 750 micrograms of folic acid
d. 200 mg of elemental iron and 1000 micrograms of folic acid

439. Which of these is the correct dosing schedule according to the modified nation iron plus initiative program?

a. 20 mg of elemental iron & 100 microgram of folic acid to 2-5 year old children weekly for an entire year
b. 100 mg of elemental iron & 500 micrograms of folic acid to pregnant women biweekly for an entire year
c. 60 mg of elemental iron & 500 micrograms of folic acid to pregnant women daily for an entire year
d. 20 mg of elemental iron to all 2-5 year old children biweekly for an entire year

440. All of the following are duties of an ASHA worker except:

a. Assisting & accompanying pregnant women to hospital for delivery
b. Primary screening for prevalence of non communicable disease
c. Administering vaccines to children
d. Assessing the success of national programme under ANM

INTEGRATED DISEASE SURVEILLANCE PROJECT (IDSP)

441. Disease not under IDSP is:

a. TB b. Dengue
c. Cholera d. Herpes Zoster

442. In IDSP which of the following type of diagnosis is done by PHC medical officer?

a. Syndromic
b. Presumptive
c. Confirmed
d. Active surveillance

IMNCI

443. IMNCI includes all except :

a. Malaria
b. Respiratory infection
c. Diarrhea
d. Tuberculosis

444. IMNCI differs from IMCI in all except:

a. Malaria and anaemia are included
b. 0-7 days infants are included
c. Sick neonates are preferred over sick older children
d. Treatment is aimed at more than one disease (Condition) at a time

445. Patient treated at home is allotted what color code according to IMNCI color coding?

a. Pink b. RED
c. Green d. Yellow

446. IMNCI target age group is:

a. Up to 5 years
b. Up to 10years
c. Up to 15 years
d. Up to 20 years

434. b	435. a	436. c	437. d	438. a	439. c	440. c	441. d	442. b	443. d
444. c	445. c	446. a							

447. If a child is classified as red category at the subcentre what is the next step?

a. Refer immediately
b. Give first dose of gentamycin & then refer immediately
c. Send the child home
d. Keep at the subcenter & manage the child

OCULAR PROGRAMS

448. Under the national program for control of blindness in India medical colleges are classified as center's:

a. Excellence b. Training
c. Service d. Vision

449. Under the school vision screening program all are true except:

a. Age group screened is 5-10 years
b. Screening is done by Teacher
c. One teacher is for 150 students
d. Cut off referral of a child is vision <6/9

450. 'SAFE' strategy for Trachoma, S stands for :

a. Surgery b. Syringing
c. streptomycin d. All of the above

451. In vision 2020, recommended ophthalmic personnel per population ratio is :

a. 5000 b. 10000
c. 50000 d. 100,000

MALARIA

452. In a town with population of 100,000 the number of slides examined is 5000. Out of these , 100 slides were positive for malaria . The API is:

a. 2 b. 5
c. 1 d. 0.5

453. Burden of malaria is best estimated by:

a. Mosquito rate b. API
c. Parasite d. SPR

454. Malaria eradication program based on use of insecticide aims to reduce lifespan of mosquito larval to less than

a. 1 day b. 3 days
c. 6 days d. 10 days

455. A pregnant women in 3rd trimester having fever was diagnosed as a case of falciparum malaria. Under NVBDCP which drug is recommended?

a. ACT only
b. ACT + single dose of Primaquine on day 2
c. Quinine only
d. Chloroquinine

456. According to revised malaria drug policy 2013, all are false except

a. Presumptive treatment with chloroquine is given
b. ACT is not given in falciparum
c. Primaquine is not given in falciparum
d. Primaquine contraindicated in infants and pregnant women

457. Plasmodium vivax malaria in pregnancy should be treated in pregnancy by:

a. Chloroquine
b. Quinine
c. Pyrimethamine
d. Mefloquine

458. Malaria surveillance should be done every:

a. Fortnightly b. Yearly
c. Monthly d. weekly

459. Blood smear must be made at night for which of the following conditions:

a. Malaria b. Filaria
c. Leprosy d. Onchocerciasis

NON COMMUNICABLE DISEASE (NCD)

460. STEPS done for surveillance of:

a. Risk factors of NCD
b. Incidence of NCD
c. Evaluation of treatment of NCD
d. Mortality from NCD

447. b	448. b	449. a	450. a	451. c	452. c	453. b	454. c	455. a	456. d
457. a	458. a	459. b	460. a						

461. National program for prevention and control of cancer diabetes cardiovascular disease and stroke (NPCDCS) true is :

a. Separate centre for stroke, cancer & DM
b. Implementation in some 5 states over 10 districts
c. District hospital has specialized facilities
d. Subcentre has facility for diagnosis and treatment

NUTRITION PROGRAMS

462. ICDS is under which ministry :

a. Health & Family Welfare
b. Women & Child Development
c. Home affairs
d. Labour

463. ICDS was launched in :

a. 1955 b. 1968
c. 1975 d. 2005

464. The best indicator for monitoring the impact of iodine deficiency disorders control programme is :

a. Prevalence of goiter among school children
b. Urinary iodine levels
c. Neonatal hypothyroidism
d. Iodine level is soil

465. FSSAI comes under

a. Ministry of consumer affairs
b. Ministry of agriculture
c. MOHFW
d. Ministry of rural development

MISCELLANEOUS

466. Not included in NMHP 1982:

a. Minimum mental health care for all
b. Application of mental health knowledge in general health care
c. Screening of family members of mentally ill patients
d. Community participation in mental health service development

467. Mental health program was started in :

a. 1982 b. 1987
c. 1990 d. 1995

468. 'Nikshay' is used for tracking of

a. High risk newborns
b. Malaria
c. TB
d. High risk pregnancy

469. Ayushman Bharat all are true except:

a. Applicable for BPL only
b. Entitled for 30000 rupees/ family
c. Smart card based
d. Is a type of insurance scheme

National Health Programmes – Explanations

RNTCP

411. A. 2 (HRZE) + 4 (HRE)

As per the new guidelines for drug sensitive TB cases whether it is drug sensitive or drug resistant; we have the same regimen that is 2 (HRZE) + 4 (HER) which is given daily

412. C. A & B

Two sputum samples 2 ml each is collected; first sample is on spot labelled as A & another is early morning sample which is labelled as B

413. A. He is declared a sputum smear + ve case: started with DOTS drug sensitive new case

Even a single sample positive is labelled as positive.

414. B. 2 & 6 months

Follow Up:

- New & previously treated Drug sensitive pulmonary TB:
  - No need to extend IP,
  - Sputum microscopy at end of IP & end of treatment
- Drug Resistant TB: Sputum smear monthly 3,4,5,6,7 months in IP & at 3 months interval in CP at 9,12,15.....

415. A. Annual risk of TB infection

Annual Risk of TB Infection (ARTI)/ Tuberculin Conversion Index (TCI):

- Definition: Proportion of population which will be primarily infected with TB in course of 1 year
- Importance:
  - Indicates incidence of TB infection
  - Best indicator of trend of TB affected by current control measures
  - Most informative index of magnitude of TB problem
- ARTI in India = 1- 2%
  - For every 1% rise of ARTI, there are 50 SS + ve cases/ lac population

416. B. To detect 90% of estimated cases & then to achieve a cure rate of 90% in drug sensitive new cases

TARGETS

- Detection: 90%
- Cure rate:
  - Drug Sensitive New: 90%
  - Drug Sensitive Previously Treated: 85%

417. A. As drug sensitive new case

Patient who has never consumed anti TB drugs or has consumed TB drugs for a span less than 4 weeks would be treated as drug sensitive new and put on treatment

418. A. Short term treatment with supervision

DOTS stands for Directly Observed Treatment Short Course

419. B. DOTS applied

Explanation for Other Options:

a. Active case finding - case finding is passive

c. Treatment is given only in smear positive case - given even in smear positive X ray positive/ Gene XPERT positive

d. General practitioners are restricted to give the treatment - they are allowed

420. B. Use separate vessels

There is no need to use separate vessels

POLIO

421. A. All children between 0-5 years of age on a single day irrespective of their previous immunization status

Pulse polio immunization is a supplementary immunization strategy

done for the purpose of eradication of polio

422. D. Adequate stool specimens should be taken from 100% AFP

It is in 90% cases

AFP Surveillance

- AFP means that paralysis is of < 4 weeks onset & the affected limbs are flaccid, i.e. floppy or limp
- Target age group: 0- 15 years
- Non polio AFP rate in < 15 years: > 2/ 1 lac
- AFP causes:
- Acute paralytic polio
- Transverse myelitis
- Traumatic neuritis
- GBS
- Entero virus (71, 72)
- Timeline for AFP Surveillance:
- AFP case investigation: Done with in 2 days of notification
- Ideally within 2 weeks of paralysis onset & at least 24 hours apart
- Can be collected up to 2 months from the date of paralysis onset
- Must re-visit every case of AFP 60 days after the onset of paralysis to confirm the presence or absence of residual paralysis
- Stool sample:
- **2** stool specimens are collected
- 8 grams – each about the size of one adult thumb
- Clean, dry, screw-capped container
- No preservative
- Reverse cold chain (red coloured vaccine carrier) at 2-8 degree
- Target: > 80% (to maintain stool adequacy)

423. B. 60 days

Medical officer must Must re-visit every case of AFP 60 days after the onset of paralysis to confirm the presence or absence of residual paralysis

424. C. To confirm year of onset of illness

It is done to confirm age of illness

425. B. All cases of AFP should be reported irrespective of diagnosis within 6 months of onset

Reported within 4 weeks of onset of weakness

RMNCHA

426. C. DLHS

Immunization trends is obtained from DLHS (District Level Health Survey), NFHS (National Family Health Survey) & CES (coverage evaluation survey)

427. A. HB

Laboratory Investigations:

Sub Centre	PHC/ CHC/ FRU
UPT Kit	Blood grouping kit
RDT for malaria	VDRL
Haemoglobin estimation	HIV
Urine dipstick for albumin & sugar	HbSAg
HIV**** (proposed)	RBS

428. B. JSSK

JSSK/ Janani Shishu Surakshya Karyakram

- **Beneficiary: ALL PREGNANT LADIES (no criteria's like JSY); entitlements provided till 3 days in NVD & 7 days for CS**
  - Pregnant lady
  - Post delivery lady till 42 days
  - Infant (1 year) (proposed for 5 years)
- **Objective: Zero OOPE (out of pocket expenditure)**

Mother	Child
Free Diagnostics	NRC's
Free Diet	IMNCI
Free Delivery services	FIMNCI
Free Drugs	NBCC
Free Transport	NBSU
Free Blood	SNCU

429. D. Provides primary medical care for minor ailments

ASHA (Accredited Social Health Activist)

- Population norm: 1 ASHA for 800 population (earlier it was 1000); proposed is 500
- Education: 10th class educated (can be relaxed to 8th class if suitable candidate is not available)
- Salary: INR 2000/- month + honorarium
- Function: serves as a bridge between health system & community (no active intervention)
- Always female is employed who is married currently/ divorced/ widow/ separated (unmarried is never employed)

430. C. Sub centre level

Sub centre is the lowest level where we make subcentre action plan which is compiled at PHC levels & then ultimately the hierarchy reaches the district

431. B. Formation of family health and social welfare societies

Welfare societies formation is not their role; it is the integration of the existing ones

432. A. Medical officer & ANM

ASHA is a part of MOHFW so she receives training from medical officer and ANM (Anganwadi worker is part of Women & Child Development Ministry)

433. A. NRHM

a. NRHM
b. National urban health mission – employs USHA
c. ICDS – employs anganwadi workers
d. Village health system

434. B. Institutional deliveries

Janani Suraksha Yojana (JSY)

Category	Rural area		Total	Urban area		Total
	Mother's package	ASHA's package*		Mother's package	ASHA's package**	(Amount in Rs.)
LPS	1400	600	2000	1000	400	1400
HPS	700	600	1300	600	400	1000

ASHA package of Rs. 600 in rural areas include Rs. 300 for ANC component and Rs. 300 for facilitating institutional delivery.

**ASHA package of Rs. 400 in urban areas include Rs. 200 for ANC component and Rs. 200 for facilitating institutional delivery.*

LPS	All pregnant women delivering in Government health centers, such as Sub Centers (SCs)/Primary Health Centers (PHCs)/Community Health Centers (CHCs)/First Referral Units (FRUs)/general wards of District or State hospitals
HPS	All BPL/Scheduled Caste/Scheduled Tribe (SC/ST) women delivering in a Government health centre, such as SC/PHC/CHC/FRU/ general wards of District or State hospital
LPS & HPS	BPL/SC/ST women in accredited private institutions

3.5.5 Cash assistance for home delivery

BPL pregnant women, who prefer to deliver at home, are entitled to a cash assistance of Rs. 500 per delivery regardless of her age and any number of children.

435. A. 2005

NRHM was a land mark program launched in 2005; till 2012 (was extended from 2012 to 2017)

436. C. Recording birth weight

ASHA doesn't get any remuneration for recording the birth weight

Revised ASHA Remuneration

	Updated	Old Incentives	Revised Incentives
Line listing of households done at beginning of the year	6 Monthly	100	300
Maintaining village register for births	Monthly	100	300
Preparation of due list for children who are to be immunized	Monthly	100	300
Preparation of list of ANC beneficiaries	Monthly	100	300
Preparation of list of eligible couples	Monthly	100	300

437. D. Free treatment of child only up to 28 days

Refer to explanation number 18

Now JSSK has been expanded to cover child up to 1 year of age

438. A. 60 mg of elemental iron and 500 micrograms of folic acid

As per the recent INIPI guidelines; the dose of IFA have been modified

Age Group	Dose/ Week	Formulation	Dosing		Colour
			Iron (mg)	Folic Acid (ug)	
6- 59 months	Bi Weekly	Liquid (1 ml)	20	100	N/ A
5- 9 years	Weekly	Tablet	45	400	Pink
10- 19 years	Weekly (WIFS)	Tablet	60	500	Blue
20- 44 years non pregnant/ lactating**	Weekly	Tablet	60	500	Red
Pregnant & lactating	Daily	Tablet	60	500	Red

439. C. 60 mg of elemental iron & 500 micrograms of folic acid to pregnant women daily for an entire year

a. 20 mg of elemental iron & 100 microgram of folic acid to 2-5 year old children weekly for an entire year: given bi weekly

b. 100 mg of elemental iron & 500 micrograms of folic acid to pregnant women biweekly for an entire year: given daily

d. 20 mg of elemental iron to all 2-5 year old children biweekly for an entire year: iron plus folic acid to children in the age group of 6- 59 months

440. C. Administering vaccines to children

Out of the options given best option is C as ASHA worker can't do a primary intervention like (delivery/ immunization/ prescribing drugs)

INTEGRATED DISEASE SURVEILLANCE PROJECT (IDSP)

441. D. Herpes Zoster

IDSP/ Integrated Disease Surveillance Project

- National decentralized state based surveillance
- Objective:
  - detect early warning signals of impending outbreaks &
  - initiate effective response in timely manner in both urban & rural area
- 2004
- Integrated = 20 diseases in one

- 3 forms for surveillance:
- S form: sub centre
- P form: PHC
- L form: laboratory
- Chain of information flow:
- Weekly schedule

Syndromes under Surveillance

Syndromes	Disease
Fever < 7 days duration without any localizing signs With rash With altered sensorium or convulsions Bleeding from skin or mucous membrane > 7 days with or without localizing sign	• Malaria • Dengue • JE • Measles • Typhoid
Cough > 2 weeks duration	TB
AFP	Polio
Diarrhoea	Cholera
Jaundice	• Hepatitis • Leptospirosis • Yellow fever
Unusual events causing death/ hospitalization	• Anthrax • Plaque • Emerging epidemics

Core Conditions Under Surveillance

Regular Surveillance	Previous slide + RTA + Emerging epidemics (meningo encephalitis, haemorrhagic fevers)	
Sentinel Surveillance	STIs	HIV, HBV, HCV
	Others	Water quality, Air quality
Regular periodic surveys	NCD risk factors	Anthropometry, Physical activity, BP, Tobacco, nutrition
Additional State Priorities		

442. B. Presumptive

3 forms for surveillance:

- S form: sub centre where surveillance based diagnosis is done
- P form: PHC where presumptive diagnosis is done
- L form: laboratory

IMNCI

443. D. Tuberculosis

IMNCI is done in small children from age of 0 to 5 years which includes common infections except TB

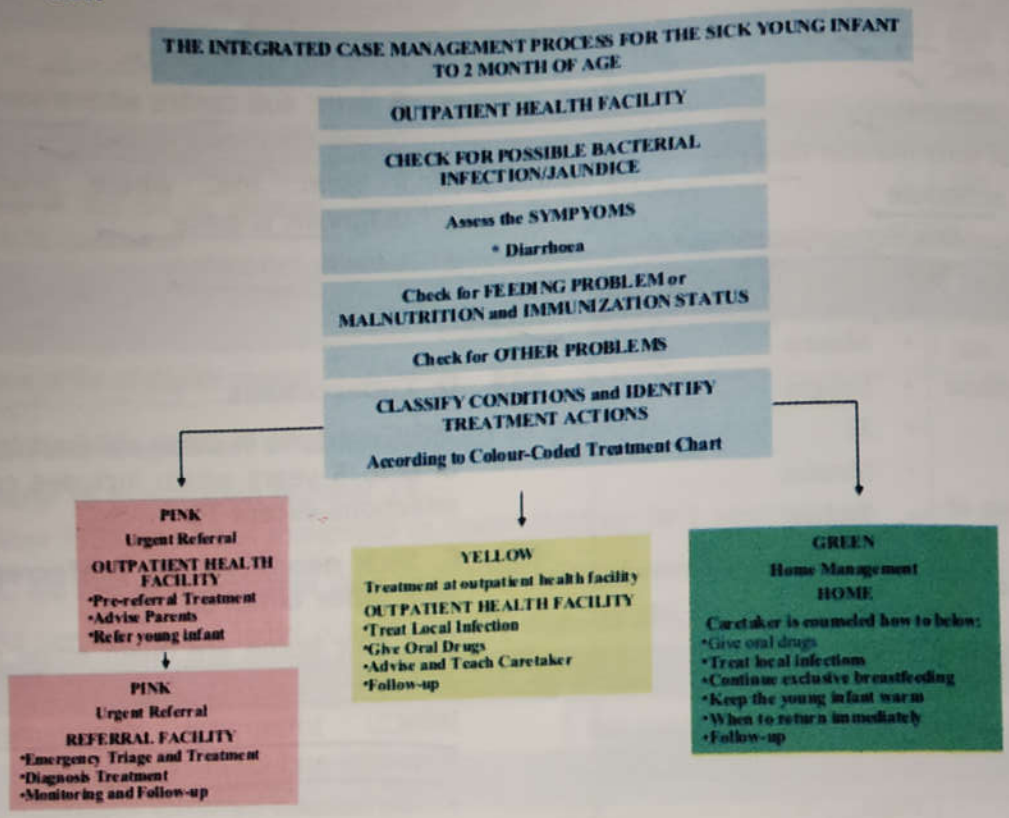
444. C. Sick neonates are preferred over sick older children

Sick new borne are given equal priority as the sick older children

IMNCI/ Integrated Management of Neonatal and Childhood Illness

- Developed by WHO + UNICEF
- Colour coded: Pink/ Yellow/ Green
- Objective: prevent deaths of child from preventable causes by standard case management
- Modules:
- Split into 2 parts
- 0-2 months & 2 months to 5 years
- Major highlights of Indian version of IMNCI is:
- Inclusion of 0- 7 days age in the programme (IMCI globally)
- Incorporating national guidelines on malaria, anaemia, vitamin A supplementation & immunization schedule
- Training of health personnel begins with sick young infants up to 2 months of age
- Skill based
- Proportion of time for training devoted to sick young infant & sick child is almost equal

445. C. Green



446. A. Up to 5 years

The module is split into 2 parts: 0- 2 months & other is 2 months to 5 years

447. B. Give first dose of gentamycin & then refer immediately

Newer guidelines say that we need to give first dose of gentamycin & then refer the child immediately for hospital admission

OCULAR PROGRAMS

448. B. Training

Vision 2020

Centre	Population	No.	Example	Role
Excellence	5 crores	20	AIIMS, LVPEI, Aravind, Shankar	Research & training
Training	50 lakhs	200	Medical College	Tertiary eye care (retina, glaucoma)
Service	5 lakhs	2000	DH & CHC	Cataract surgeries
Vision	50000	20000	PHC	Vision testing school eye checking

449. A. Age group screened is 5-10 years

School children eye screening:

- V – VIII class/ 10- 14 years age group
- Teachers perform the screening (1/ 150 students)

- Visual acuity cut off for PHC referral: < 6/9

450. A. Surgery

SAFE – Surgery, Antibiotic, Facial cleanliness, Environmental hygiene

451. C. 50000

Ophthalmic assistant is posted at the vision centre which harbours population of 50000; whereas in the rest of the higher centres there is ophthalmologist who is posted

MALARIA

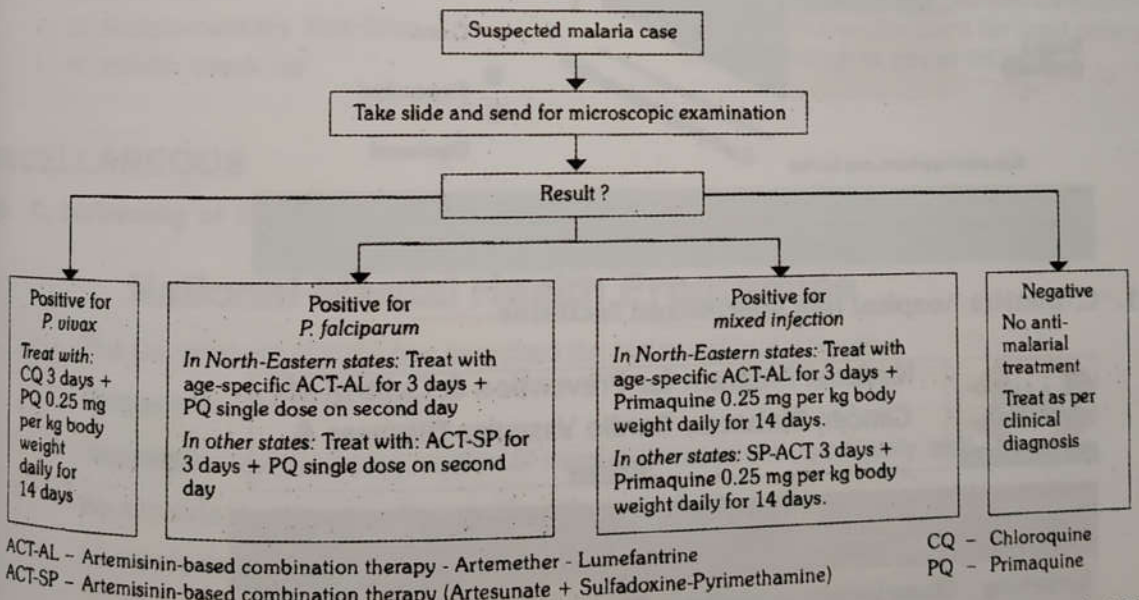
452. C. 1

API (Annual Parasitic Index) =

$\frac{\text{Confirmed cases during 1 year}}{100 \times 1000} \times 1000 = 1$

455. A. ACT only

A. *Where microscopy result is available within 24 hours*


Suspected malaria case
Take slide and send for microscopic examination
Result ?
Positive for P. vivax
Treat with: CQ 3 days + PQ 0.25 mg per kg body weight daily for 14 days
Positive for P. falciparum
In North-Eastern states: Treat with age-specific ACT-AL for 3 days + PQ single dose on second day
In other states: Treat with: ACT-SP for 3 days + PQ single dose on second day
Positive for mixed infection
In North-Eastern states: Treat with age-specific ACT-AL for 3 days + Primaquine 0.25 mg per kg body weight daily for 14 days.
In other states: SP-ACT 3 days + Primaquine 0.25 mg per kg body weight daily for 14 days.
Negative
No anti-malarial treatment
Treat as per clinical diagnosis

ACT-AL – Artemisinin-based combination therapy - Artemether - Lumefantrine
ACT-SP – Artemisinin-based combination therapy (Artesunate + Sulfadoxine-Pyrimethamine)
CQ – Chloroquine
PQ – Primaquine

Treatment of uncomplicated P. falciparum cases in pregnancy: PQ is contraindicated, ACT is contraindicated in 1st trimester

- 1st trimester: Quinine
- 2nd & 3rd trimester: area specific ACT

456. D. Primaquine contraindicated in infants and pregnant women

Explanation for other options:

a. Presumptive treatment with chloroquine is given: now there is no concept of presumptive treatment

b. ACT is not given in falciparum: ACT is DOC in falciparum

c. Primaquine is not given in falciparum: PQ single dose in given in day 2

Population under surveillance 100000

453. B. API

Importance:

- **ABER**: Index of operational efficiency; tells fever prevalence
- **API**: Gives burden of malaria (prevalence)
- **SPR:** Very good outbreak indicator

454. C. 6 days

Life Cycle of Female Mosquito: Overall life span: 8 to 34 days

- Larval stage: 5 to 7 days
- Egg stage: 1- 2 days
- Transformation to Adult stage: 7- 10 days
- Adult: 2 weeks

457. A. Chloroquine

Quinine is used for P. falciparum; Mefloquine is used for chemoprophylaxis

458. A. Fortnightly

Health worker male visits home of people and if any person had fever in last 15 days MP slide is made

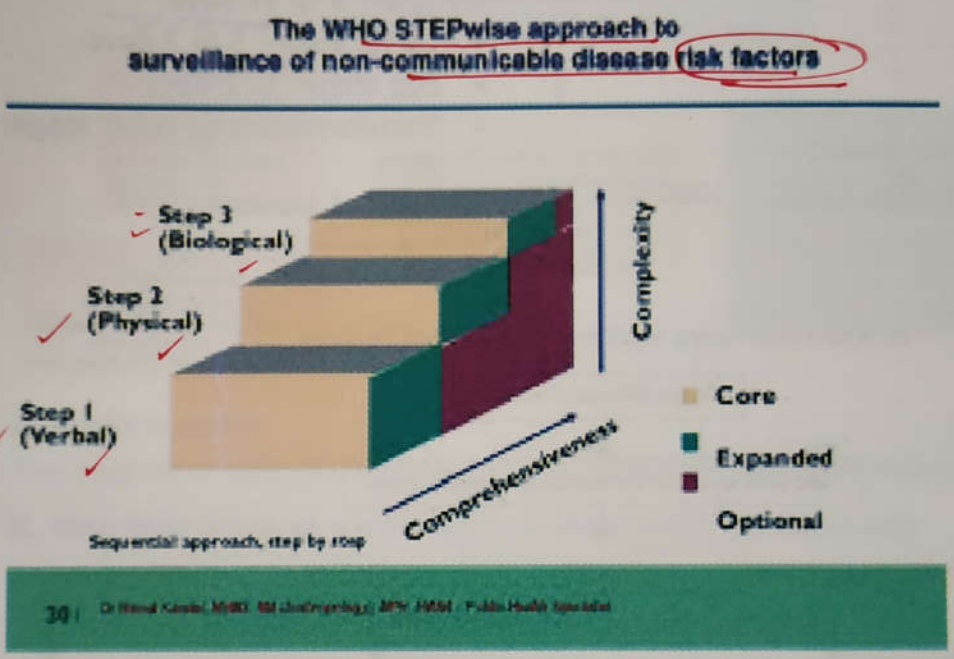
459. B. Filaria

Mass blood survey: Thick film is done in filaria

- MC method
- 20 mm^3 of blood
- Collected 8.30 pm to 12.30 am mid-night: Mf have nocturnal periodicity

NON COMMUNICABLE DISEASE (NCD)

460. A. Risk factors of NCD



461. C. District hospital has specialized facilities

National Program for Prevention & Control of Cancer, Diabetes, Cardio Vascular Diseases & Stroke

Features	Sub centre	PHC	CHC	DH	Medical College
Screening for NCD	Opportunistic screening (> 30 years) & Health Promotion				
Screening for Cancer	Clinical signs & symptoms based			Diagnostic tools used	
NCD OPD Treatment	No	Weekly NCD clinic	Bi weekly clinic	Daily NCD Clinic	
IPD	No facility			Facility present	
Cancer care				Chemo therapy	Comprehensive cancer care

Explanation for other options:

a. Separate centre for stroke, cancer & DM – Integrated with the existing system

b. Implementation in some 5 states over 10 districts – Implementation now all over the country

c. District hospital has specialized facilities

d. Subcentre has facility for diagnosis and treatment – No laboratory services at sub center

NUTRITION PROGRAMS

462. B. Women & Child Development

ICDS (Integrated Childhood Development Scheme & Services)

- 1975, Ministry of WCD
- Centrally sponsored
- Beneficiaries (**irrespective of social status**)
- Aanganwadi (site of service delivery)
- Interventions:
- S: Supplementary Nutrition
- H: Health check up
- I: Immunization
- Ne: Non formal education
- R: Referral
- He: Health education

463. C. 1975

Was launched in 1975

464. B. Urinary iodine levels

Importance:

- NEONATAL HYPOTHYROIDISM- most sensitive indicator:
- Environmental iodine deficiency
- Evaluation of program
- URINARY IODINE EXCRETION-
- Principal impact indicator for surveillance after implementing the programme
- Epidemiological Indicator
- Goitre Rate- Chronic Impact Indicator

465. C. MOHFW

FSSAI (Food Safety & Standards Authority of India) is the standard for food criteria's in India which is under MOHFW

MISCELLANEOUS

466. C. Screening of family members of mentally ill patients

National Mental Health Programme

- The Government of India has launched the National Mental Health Programme (NMHP) in 1982,
- Keeping in view the heavy burden of mental illness in the community, and the absolute inadequacy of mental health care infrastructure in the country to deal with it,
- **4 RMH** (Pune, Thane, Nagpur, Ratnagiri) &
- **6 DMHP** - Raigad, Jalgaon, Satara, Parbhani, Buldhana, Amravati)
- 6 New DMHP – Nashik, Osmanabad, Wardha, Bhandara, Gadchiroli, A'nagar – PIP sanctioned by GOI
- PIP Rs. 83.20 lakhs sanctioned for each new DMHP
- PIP for old district are under consideration by GOI

467. A. 1982

Launched in 1982

468. C. TB

Nikshay is ICT based tracking method for drug compliance in TB

469. B. Entitled for 30000 rupees/ family

AB NHPM/ Ayushaman Bharat National Health Protection Mission Pradhan Mantri Jan Aroyaag Abhiyann

- Launched on 23rd September, 2018
- Major impact on reduction of Out of Pocket (OOP) expenditure on ground of:
- Increased benefit cover to nearly 40% of the population, (the poorest & the vulnerable)
- Covering almost all secondary and many tertiary hospitalizations (except a negative list)
- Coverage of 5 lakh for each family (no restriction of family size)

Demography & Family Planning – Questions

470. Demographic gap attains its maximum limit in:
a. Early stage I b. Late stage II
c. Late stage III d. Early stage IV

471. True about late expanding phase of demographic cycle:
a. Birth rate is lower than death rate
b. Death rate declines still further , & birth rate tends to increase
c. Death rate declines still further, & birth rate tends to fall also
d. High birth rate & high death rate

472. In which stage of demographic cycle is India currently?
a. High stationary b. Late expanding
c. Early stationary d. Low stationary

473. 'Demographic processes' does not include:
a. Fertility b. Morbidity
c. Mortality d. Social mobility

474. Movement is social economic level is:
a. Social equality
b. Social mobility
c. Socio economic up liftment
d. Social mobilization

475. At current growth rate India's population will double in:
a. 23-38 years b. 28-35 years
c. 35-47 years d. 47-70 years

476. Current annual growth rate of a population can be calculated by:
a. Crude birth rate (CBR) - crude death rate (CDR)
b. CDR - CBR
c. Decadal growth rate/ 10
d. CBR + CDR

477. CBR is a simplest measure of fertility because it includes:
a. Total population
b. Mid year population
c. Live births only
d. Pre-term births

478. First census in India was done in?
a. 1861 b. 1871
c. 1881 d. 1891

479. CBR – not true is :
a. It is a measure of fertility
b. It is actually a ratio not a rate
c. It is independent of age of population
d. Numerator does not include still births

480. What is exponential growth?
a. Rapid growth in population that leads to misbalance in birth and death
b. Slow growth rate
c. Growth limited by limiting factors
d. None of the above

481. Age pyramid of India is:
a. Broad at base & narrow at apex
b. Broad from base to apex
c. Broad at apex & narrow at base
d. All

482. The carrying capacity of any given population is determined by its:
a. Population growth rate
b. Birth rate
c. Death rate
d. Limiting resource

483. For a population of 10000, sex ratio of more than 1000 means:
a. Males are less than 500
b. Females are less than 500
c. Males are less than 5000
d. Females are less than 5000

484. In calculating dependency ratio, the numerator is expressed as:
a. Population under 10 years and 60 and above
b. Population under 15 years and 60 and above
c. Population under 10 years and 65 and above
d. Population under 15 years and 65 and above

470. b	471. c	472. b	473. b	474. b	475. d	476. c	477. b	478. b	479. b
480. a	481. a	482. d	483. c	484. d					

485. Community X has 30% below 15 years of age and 10% over 65 years of age. Dependency ratio for community X is:
a. 20% b. 40%
c. 66.6% d. 3%

486. Potential support ratio (PSR) is defined as:
a. Number of persons aged 15-65 per children below 15 years
b. Number of persons age 15 to 65 per one older person aged ≥ 65 years
c. Number of persons aged 15 to 65 per one older person aged ≥ 65 & younger person <15 years
d. Number of persons aged 15 to 65 persons older person aged > 60 and younger person < 15 years

487. True regarding Census of India is all except:
a. Done by Ministry of Home Affairs
b. Done every 5 years
c. Census Commissioner is the supreme head
d. First started in 1871

488. True about 'total fertility rate' is:
a. Sensitive indicator of family planning achievement
b. Completed family size
c. Numbers of live birth/ 1000 married women in reproductive age group
d. Average number of girls born to a woman

489. If the total fertility rate is India is 2.2, the crude birth rates would be :
a. 18.6 per 1000 population
b. 19.2 per 1000 population
c. 22.4 per 1000 population
d. 26.2 per 1000 population

490. Number of live birth per 1000 women in the reproductive age group in a year refers to:
a. Total fertility rate
b. Gross reproduction rate
c. Net reproduction rate
d. General fertility rate

491. If TFR in a population is 4 per woman the GRR approx, would be :
a. 2 b. 4
c. 8 d. 16

492. Total Fertility Rate all are true except:
a. Total no of children born to a woman in a given year
b. Measure of completed family size
c. Sum of fertility of all age
d. Total no of child born to mother

493. Population growth is said to be less than adequate requirement when NRR is:
a. < 1 b. = 1
c. > 1 d. = 0

494. Demographers are of the view that the demographic goal on NRR=1 can be achieved only if the couple protection rate exceeds:
a. 40% b. 50%
c. 60% d. 70%

495. Which of the following include mortality rate?
a. TFR b. GFR
c. NRR d. GRR

496. Best indicator of fertility :
a. CBR b. TFR
c. NRR d. GRR

497. Child is borne to an Indian couple outside India, Birth registration must be done within
a. 21 days
b. 21 days of arrival of India
c. 60 days
d. 60 days of arrival in India

498. Sample registration system done for both death and birth enumeration at:
a. 6 months b. 1 years
c. 5 years d. 10 years

499. State used as yardstick of health in India is
a. TN b. Kerala
c. AP d. Gujarat

485. c	486. b	487. b	488. b	489. a	490. d	491. a	492. a	493. a	494. c
495. c	496. c	497. d	498. a	499. b					

500. National Family Health Survey has successfully completed :

a. One rounds b. Two rounds
c. Three rounds d. Four rounds

501. The age and sex structure of a population may be describe by a :

a. Life table
b. Correlation coefficient
c. Population pyramid
d. Bar chart

502. All are true regarding Sample Registration System (SRS) except:

a. Initiated in the 1960
b. Estimated of birth and death rates
c. Dual-record system
d. Survey should be done every year

503. What is the best determinant of the health status of a country :

a. CPR b. IMR
c. MMR d. CDR

504. Which of the following year in the history of demography of India is India is known as the year of big divide?

a. 1881 b. 1921
c. 1947 d. 1978

505. Census is conducted every (years):

a. 25 b. 15
c. 10 d. 20

506. The system of collection of data to give national and subnational estimate of vital indicators consist of continuous enumeration backed by 6 months survey is:

a. Model registration survey
b. National sample survey
c. Sample registration system
d. National family health survey

507. First disability census was done in the year:

a. 1881 b. 1951
c. 1981 d. 2001

508. Birth and death registration act came into force on

a. 1968 b. 1969
c. 1970 d. 1971

509. Census 2001 Population count was as on:

a. 00.00hrs 01 March
b. 06,00hrs 01 March
c. 00.00 hrs 31 March
d. 00.00 hrs 01 April

500. d	501. c	502. d	503. b	504. b	505. c	506. c	507. c	508. b	509. a

Demography & Family Planning – Explanations

470. B. Late stage II

Demographic Gap (CBR – CDR):

- Narrow: I & IV
- Negative: V
- Increasing: Early stage II
- Declining: Early stage III
- Maximum: Late stage II

471. C. Death rate declines still further, & birth rate tends to fall also

Demographic Cycle:

Properties	I	II	III	IV	V
	High stationary	Early expanding	Late expanding	Low stationary	Declining
Birth rate	High	High	Declining	Low	Low
Death rate	High	Declining	Declining	Low	Declining
Demographic gap	Narrow	Increasing		Narrow	Reversal
Population	Stationary	Growing		Stationary	Decreasing
Composition	Young	Young		Mixed	Ageing
Age pyramid	Pyramidal	Losing pyramidal	Globular	Cylindrical	Losing cylindrical
Example			India		Germany, Italy, Spain, Portugal

472. B. Late expanding

India is in phase 3 which refers to late expanding phase of demographic cycle

473. B. Morbidity

Demographic process includes marriage, fertility, mortality & social mobility

474. B. Social mobility

Social mobility refers when families move from one socio economic level to the other

475. D. 47-70 years

Annual growth rate = $\frac{\text{Crude Birth Rate} - \text{Crude Death Rate} = 20.4 - 6.4 = 14/\ 10 = 1.4}{10}$ Population Doubling

Time = 70/ AGR = 70/ 1.4 = 50 years

476. C. Decadal growth rate/ 10

Annual growth rate = $\frac{\text{Crude Birth Rate} - \text{Crude Death Rate}}{10}$

477. B. Mid year population

CBR is the simplest because it is independent of the population

$$CBR = \frac{\text{Number of Live Births}}{\text{Mid year population}} \times 1000$$

Numerator doesn't include still births

478. B. 1871

Last census = 2011

479. B. It is actually a ratio not a rate

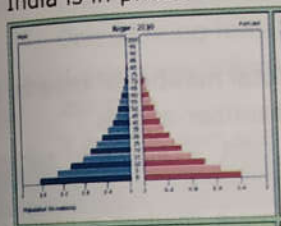
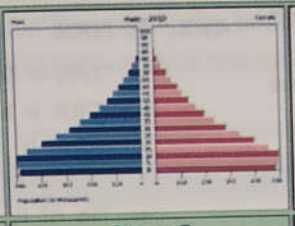
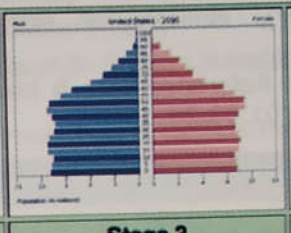
CBR is a rate as numerator is part of denominator and has time component in it

480. A. Rapid growth in population that leads to misbalance in birth and death

Out of the options; option A is the best exponential growth leads to population trap

481. A. All

India is in phase III of demographic cycle

			
Stage 1	**Stage 2**	**Stage 3**	**Stage 4**
Expansive.	Expansive.	Stationary.	Contractive.
Concave sides.	Straight sides.	Convex sides.	Convex sides.
High birth rate.	Still high birth rate.	Declining birth rate.	Very low birth rate.
High death rate.	Falling death rate.	Low death rate.	Low death rate.
Short life expectancy.	Slightly longer life expectancy.	Long life expectancy.	Longer life expectancy.
Rapid fall in each upward age group due to high DR.	Fall in DR so more people living into middle age.	An increasing proportion of the population is in the 65+ age group.	Higher dependency ratio.
Niger	Haiti	Morocco	Australia

482. D. Limiting resource

Carrying Capacity:

- Definition: Supportable population of an organism, given the natural resources available in an ecosystem
- Determined by its limiting resources
- Below it, population increase & vice versa

483. C. Males are less than 5000

Sex ratio = Number of females/ Number of males

In this question sex ratio of > 1000 means that more females in comparison to males and since the population is given as 10000 so we need to take it 5000 (not 500)

484. D. Population under 15 years and 65 and above

$$SDR = \frac{(< 15 \text{ years} + > 65 \text{ years})}{\text{Population } 15 - 65 \text{ years}}$$

485. C. 66.6%

SDR = (30 + 10)/ 60 = 67%

486. B. Number of persons age 15 to 65 per one older person aged ≥ 65 years

Potential Support Ratio:

- Number of persons aged 15- 65 years per 1 elderly ≥ 65 years
- Provides details of burden placed on working group
- Inverse of SDR

487. B. Done every 5 years

Census:

- Every 10 years census is done
- Registrar General (census commissioner), Ministry of Home Affairs
- Census stop: Reference date & time (00.00 hours 01.03.2011)

488. B. Completed family size

- **TFR**
  - **Standardized index for fertility level**
  - **Synthetic/ artificial rate:** no counting as this would mean that waiting until women completes child bearing
  - **Magnitude of completed family size**
  - Replacement level of fertility, TFR = 2.1
- **NRR:**
  - NRR = 1, each generation of women is exactly reproducing itself
  - To achieve NRR = 1: CPR > 60%
  - **Best indicator of fertility**

489. A. 18.6 per 1000 population

CBR = 8 * TFR + 1 = 8 * 2.2 + 1 = 18.6

490. D. General fertility rate

- General Fertility Rate (GFR):

$$\frac{\text{No. of live births in the given year}}{\text{No. of women of 20 to 44 year}} \times 1000$$

- Age specific fertility rate (ASFR):

$$\frac{\text{No.of live births in specific age group}}{\text{Mid year population of same age}} \times 1000$$

- TFR:

$$\text{Sum of all age specific fertility rate} \times \text{Interval in age group}$$

$$1000$$

491. A. 2

TFR = 2 * NRR (for a balanced population)

492. A. Total no of children born to a woman in a given year

TFR refers to total number of children born to a woman in her entire life span

493. A. < 1

NRR = 1 is a sign of balanced population

494. C. 60%

NRR = 1 is a sign of balanced population which can be achieved when CPR = 60%

495. C. NRR

- TFR = Total number of children born
- GRR = Number of girls
- NRR = GRR + Mortality patterns & Life expectancy
- No of female children a newborn girl has in life time taken into account mortality & fertility patterns

496. C. NRR

NRR is the best as it takes into the account the mortality patterns and life expectancy

497. D. 60 days of arrival in India

Birth & Death Registration Act, 1969

- Birth & Death must be registered within: 21 days
- Marriage to be registered within: 30 days
- Born outside: within 60 days of arrival in India

498. A. 6 months

Sample Registration System:

- Dual record system:
- Field investigation: continuous enumeration of births & deaths by enumerator
- Independent retrospective survey: every 6 months by an supervisor
- Advantages:
- Elimination of errors of duplication
- Self evaluating technique
- Primary objective: To establish most probable cause of death/ post death verbal autopsy

- Main objective: To provide estimates of BR, DR, IMR
- Sampling: uni- stage stratified simple random sample (IMR is the decisive indicator for sample size estimation)

499. B. Kerala

Kerala is the best performing state in all the health related indicators in India

500. D. Four rounds

4 rounds completed: 1992- 93, 1998- 99, 2005- 06, 2016- 17

501. C. Population pyramid

Population Pyramid:

- Age sex pyramid & age structure diagram
- Double histogram: 2 back to back
- One showing number of males (left)
- One showing females in a particular population (right)
- X axis: population (%), if we take the ratio of 0- 5 years females to males, we get child sex ratio
- Y axis: 5 year age group intervals , maximum height depicts the life expectancy

Property	Upright / Expansive	Stationary	Constrictive/ Inverted
Phase	II & III	I & IV	V

502. D. Survey should be done every year

Survey is done every 6 months

503. B. IMR

IMR is the Most important indicator of:

- **SES (SE development: U5MR)**
- Health status of a community/ country
- Level of living
- Effectiveness of MCH services/ Best predictor of govt. Failure
- Combined parameter for paediatric & obstetric care in country
- Sensitive indicator of availability & utilization of health services

504. B. 1921

After the year 1921 the population of India started to grow

505. C. 10

Last census was done in 2011; next is scheduled in 2011

506. C. Sample registration system

Sample registration system is done every 6 months to estimate & update the vital statistics of the country

507. C. 1981

1st census was done in 1871 & 1st disability in 1981

508. B. 1969

Birth & death registration act is of 1969; census act in 1948

509. A. 00.00hrs 01 March

The reference date & time is called as census stop.

Maternal & Child Health – Questions

510. The extra energy allowances needed per day during pregnancy is:

a. 150 KCals b. 200 Kcals
c. 300 KCals d. 350 Kcals

511. Iron & folic acid tablets to be given daily to mother has:

a. 60 mg iron + 500 mcg folic acid
b. 100 mg iron + 500 mcg folic acid
c. 60 mg iron + 100 mcg folic acid
d. 100 mg iron + 100 mcg folic acid

512. Which of the following is not included in '5 cleans' in conduct of delivery?

a. Clean hands
b. Clean perineum
c. Clean cutting & care of cord
d. Clean surface for delivery

513. A 37 weeks pregnant woman attends an antenatal clinic at a Primary Health Centre. She has not had any antenatal care till now. The best approach egarding tetanus immunization in this case would be to:

a. Give a dose of Tetanus Toxoid (TT) & explain to her that it will not protect new born & she should take second dose after 4 weeks even if she delivers in the meantime
b. Don't waste TT vaccine as it would any how be of no use in this pregnancy
c. Given one dose of TT & explain that it will not be useful for this pregnancy
d. Give her anti-Tetanus Ig along with the TT vaccine

514. All are criteria for identifying 'at risk' infants except:

a. Birth weight less than 2.8 kgs
b. Birth order 4 or more
c. PEM, diarrhea
d. Working mother

515. Average weight gain during pregnancy in poor Indian women is about:

a. 12 kgs b. 10 kgs
c. 6.5 kgs d. 2.5 kgs

516. MCH care is assessed by:

a. Death rate
b. Birth rate
c. Maternal mortality rate
d. Anaemia in pregnancy

517. The daily extra calorie requirement in first trimester of pregnancy is

a. 0 b. 150
c. 350 d. 450

518. For a given population, minimum no. of newborns to be examined for calculating percentage of LBW babies is:

a. 100 babies b. 500 babies
c. 1000 babies d. 10000 babies

519. Mean Birth weight of Indian babies is

a. 2.5 kgs b. 2.8 kgs
c. 3.1 kgs d. 3.5 kgs

520. Low birth weight has been defined as a birth weight:

a. < 2000 grams
b. < 2500 grams
c. < 2800 grams
d. ≤ 2500 grams

521. Which of the following advise should be given for an infant suffering from mild diarrhea?

a. Continue breast feeding
b. Antibiotics
c. Stop all breast feed and start ORS
d. Intravenous fluid administration

522. Minimum antenatal visit as per MCH in India is:

a. 1 b. 2
c. 3 d. 4

523. Prevalence of low birth weight in India is:

510. d	511. a	512. b	513. a	514. a	515. c	516. c	517. a	518. b	519. b
520. b	521. a	522. d	523. d						

a. 26% b. 28%
c. 30% d. 18%

524. Which of the following is age independent indicator of malnutrition?

a. Underweight b. Stunting
c. Wasting d. MAC

525. All of the following are common cause of post neonatal infant mortality in India, except:

a. Tetanus
b. Malnutrition
c. Diarrhoeal diseases
d. Pneumonia

526. Maternal Mortality Ratio is calculated by:

a. Maternal deaths/ live birth
b. Maternal deaths/ 1000 live births
c. Maternal deaths/ 100000 live births
d. Maternal deaths/ 100000 live population

527. All of the following deaths are included in as cause of maternal death except:

a. Following abortion
b. During lactation 1st month
c. during lactation 8th month
d. During the last trimester due to APH

528. Among the following the best indicator of death in a community is:

a. Maternal mortality rate
b. Infant mortality rate
c. Life expectancy rate
d. Neonatal mortality rate

529. Leading cause of maternal deaths in India is:

a. Anemia
b. Hemorrhage
c. Sepsis
d. Obstructed labour

530. Infant mortality does not include:

a. Early neonatal mortality
b. Perinatal mortality
c. Post neonatal mortality
d. Late neonatal mortality

531. Sensitivity parameter of combined pediatric & obstetric care in our country is:

a. IMR b. PNMR
c. NNMR d. NMR

532. The postnatal period extends for:

a. 2 Weeks b. 4 Weeks
c. 6 Weeks d. 8 Weeks

533. Perinatal mortality rate includes:

a. Deaths within first week of life
b. Abortion, Stillbirths, deaths within first year of life
c. Deaths from 28 weeks to first week of life
d. Deaths within one month of life

534. In a population, total births in a year are 4050. There are 50 still births & also 50 neonates who die within first 7 days of life whereas the number of deaths within 8-28 days of life is 150. What is the neonatal mortality rate in the population?

a. 12.5 b. 50
c. 49.4 d. 62.5

535. Child survival index is calculated by?

a. 1000-IMR/10
b. IMR-1000/10
c. 1000-U5MR/10
d. U5MR-1000/10

536. The current neonatal mortality is:

a. 25 b. 30
c. 34 d. None

537. Maternal mortality is maximum in.....period:

a. Antepartum b. Peripartum
c. Postpartum d. None

538. ARI are important cause of U5MR in India. What measures will you take for prevention & control of ARI in remote areas?

a. Case management and health education to mothers
b. Vaccination
c. Controlling malnutrition, Breast feeding, Vitamin A supplementation
d. All

524. d	525. a	526. c	527. c	528. b	529. b	530. b	531. a	532. c	533. c
534. b	535. c	536. a	537. c	538. d				

539. Denominator in, under 5 proportionate mortality rate is:

a. Mid year population
b. Mid year population in 5 years age
c. Number of live birth in same year
d. Total deaths

540. The following doesn't suggest Under Five Care in the community:

a. Infant mortality rate
b. 1-4 year mortality
c. Neonatal tetanus
d. Deaths due to diarrheal disease between 1-5 years

541. In a population of 5000, with birth rate of 30/1000 population, 15 children died during first year of life. Of these 9 died during first month of life. What is the infant mortality rate in this population?

a. 100 b. 60
c. 150 d. 45

542. World breast feeding week is celebrated in month of:

a. January b. August
c. October d. April

543. Deficit in weight in a 3-year-old child indicates:

a. Acute malnutrition
b. Chronic malnutrition
c. Concomitant acute and chronic malnutrition
d. Under weight

544. Which of the following does not indicate poor nutrition in children?

a. Low birth weight
b. Infection
c. Haemoglobin> 11gm%
d. Malnutrition

545. Type of growth charts used by Anaganwadi workers for growth monitoring

a. NCHS b. IAP
c. MRGS d. CDC

546. The best parameter for assessment of Acute malnutrition is:

a. Weight for age
b. Weight for height
c. Height for age
d. Any of the above

547. Mid-arm Circumference is constant during:

a. 0-6 months b. 1-5 years
c. 5-10 years d. 10 years

548. Road to health card or the growth chart was first designed by:

a. Edwin Chandwick
b. David Morley
c. C. Gopalan
d. C.E. Winslow

549. The commonest morbidity in schools is:

a. Dental ailments
b. Worm infestations
c. Malnutrition
d. Skin disease

550. All of the following are minimum standards for sanitation of schools in India except:

a. Desks to be 'Minus type'
b. Combined doors + windows area = 25% of floor space areas
c. Maximum 40 students/ classroom
d. One urinal for 10 students and one latrine for 25 students

551. The guidelines according to baby friendly hospital initiative include all except :

a. Mothers and infant to be together for 24 hours a day
b. Mother to initiate breast feeding within 2 hours of normal delivery
c. Giving newborn infants no food or drink other then breast milk
d. Encouraging breast feeding on demand

552. Which of the following is the nodal ministry for Integrated Child Development Services (ICDS)?

a. Ministry for Human Resource Development
b. Ministry for Rural Development
c. Ministry for Health and Family Welfare
d. Ministry of Women and Child Development

539. d	540. c	541. a	542. b	543. a	544. c	545. c	546. a	547. b	548. b
549. a	550. d	551. b	552. d						

553. Integrated management of childhood illness (IMCI) was taken to prevent morbidity and mortality from all except:

a. Malaria
b. Malnutrition
c. Otitis media
d. Neonatal tetanus

554. Which of the following is known as 'Heart of ICDS system?

a. Mother and children
b. CDPO
c. Primary Health centre
d. Anganwadi

555. Mother friendly childbirth initiative was launched in:

a. India
b. Britain
c. Australia
d. USA

556. ICDS include children upto age of years:

a. 3
b. 5
c. 6
d. 14

557. All are true about Anganwadi workers Except:

a. Covers population of 5000
b. Part time workers
c. Supply nutrition, educate for vaccination
d. Under controls of Women and Child Development

558. In ICDS all of the following are included except:

a. Immunization
b. Health Education
c. Prevention of iodine deficiency disorders
d. Supplementary nutrition

559. According to IMNCI Program the term "YOUNG INFANTs" includes children below the what age?

a. Seven days
b. 28 days
c. Two months
d. Six months

553. d	554. d	555. d	556. b	557. a	558. c	559. c

510. D. 350 Kcals

	Extra Calorie (kCal)
Pregnant	+ 350 (1st trimester: 0 > + 150 – earlier)
Lactation (0- 6 month)	+ 600
Lactation (6- 12 month)	+ 520

511. A. 60 mg iron + 500 mcg folic acid

New dose of IFA tablets is 60 mg of iron + 500 ug folic acid to be given from day 1 of 14th week of gestation till 6 months post delivery (period of 1 year) with lemon water

512. B. Clean perineum

Cleans of safe delivery: To prevent Maternal Neonatal Tetanus

- Clean Delivery Surface (rubber/ plastic sheet)
- Clean Hands (soap and gloves)
- Clean Cord Care
- Cut (blade)
- Tie (thread)
- Stump (no application to cord)
- Clean Water
- Clean Towel

513. A. Give a dose of Tetanus Toxoid (TT) & explain to her that it will not protect new born & she should take second dose after 4 weeks even if she delivers in the meantime

In addition to the above intervention; infants born to unimmunized mothers or partially immunized mothers should be given 750 IU anti toxin within 6 hours of birth

514. A. Birth weight less than 2.8 kgs

At risk child:

- 1 parent/ single parent
- Twin
- Birth weight < 2.5 kg
- 3 months failure to gain weight
- Birth order > 3
- Artificial feeding
- Weight < 70% expected
- Working mother

515. C. 6.5 kgs

Ideal weight gain is 12 kgs but in India average is only 6.5 kgs

516. C. Maternal mortality rate

Out of the options given the best answer is C

517. A. 0

New guidelines say that there is no need for extra calories in 1st trimester of pregnancy

518. B. 500 babies

Factual question

519. B. 2.8 kgs

Factual question

520. B. < 2500 grams

- LBW: < 2.5 kgs
- %age of LBW be based on measurements of minimum of at least 500 babies
- LBW in not a C/ I for any vaccination except hepatitis B, if BW < 2 kg then hepatitis B vaccine is not given
- MC cause is prematurity
- VLBW: <1.5 kgs
- ELBW: <1.0 kgs
- Average birth weight in India = 2.8 kgs
- % age of LBW in India = 18.5% (2014)
- 1.8 kgs: cut off for admission into NICU
- KMC: Supportive care in stable newborns < 2500 gm

521. A. Continue breast feeding

b. Antibiotics should not be used

c. Breast feeding is the source of nutrition for the child

d. IV fluid is only needed it there is diarrhoea with severe dehydration but best is ORS

522. D. 4

- Ideal Visits (WHO):
- Monthly visits till 7th month (7)
- Bimonthly visit in 8th month (2)
- Weekly visit in 9th month (5)
- Minimum Visits: 4 (India); 8 (WHO)
- 1 early registration (< 12 weeks)
- 2nd visit: 14- 26 weeks
- 3rd visit: 28- 34 weeks
- 4th visit: after 36 weeks

523. D. 18%

Factual Question

524. D. MAC

Mid arm circumference is age independent indicator of malnutrition

MAC	Colour	Grading
> 13.5 cm	Green	Normal
12.5- 13.5 cm	Yellow	Moderate Malnourished
< 12.5 cm	Red	Severe Malnourished

525. A. Tetanus

Causes of paediatric mortality:

Endogenous	Exogenous
Prematurity (33%)	Diarrhoea
LBW (28%)	Pneumonia
Infection	Malnutrition
Asphyxia	Accident
Trauma	
SBR, PMR, NMR	Child Death rate, U5MR*
IMR (Endogenous > Exogenous) * U5MR: Same causes but Pneumonia (MC)	

526. C. Maternal deaths/ 100000 live births

$$MMR = \frac{\text{Number of maternal deaths}}{\text{Number of live births}} \times 100000$$

527. C. during lactation 8th month

Maternal Mortality includes:

- Pregnant & post delivery till 42 days
- Death due to pregnancy related cause (Not due to accident)
- Irrespective of period of gestation

528. B. Infant mortality rate

IMR is the most important indicator of:

- **SES (SE development: U5MR)**
- Health status of a community/ country
- Level of living
- Effectiveness of MCH services/ Best predictor of govt. Failure
- Combined parameter for paediatric & obstetric care in country
- Sensitive indicator of availability & utilization of health services

529. B. Hemorrhage

Causes of Maternal Mortality:

Direct causes:

- Haemorrhage (37%)
- Abortion (20%)
- Sepsis (10%)
- Obstruction (5%)
- Eclampsia (5%)
- Others

Indirect Causes: Anaemia (35%)

530. B. Perinatal mortality

Infant mortality refers to period from 0 to 1 year; so it won't include perinatal period which spans from 28th week of gestation

531. A. IMR

IMR provides a very good indicator of both paediatric & obstetric care

532. C. 6 Weeks

Postnatal period is till 42 days/ 6 weeks

533. C. Deaths from 28 weeks to first week of life

Indicator (Rate)	Numerator	D
Still Birth	Still births	Live births + still births
Peri Natal	Peri natal **(> 35 cms of crown heel length)**	Live births + still births
Early	Early (0 to 7 days)	Live births
Late (MC: prematurity)	Late (7 to 28 days)	
Neonatal (MC: infection)	Neonatal (0 to 28 days)	
Post Neonatal	Post neonatal (28 days to 1 year)	
Infant Mortality Infant (0- 1 years)		

534. B. 50

$$NMR = \frac{\text{Number of neonatal deaths}}{\text{Number of live births}} \times 1000 = \frac{50\ (0\text{- }7\text{ days}) + 150\ (8\text{- }28\text{ days})}{4050\ (\text{total births}) - 50\ (\text{still birth})} \times 1000 = 50$$

535. C. 1000-U5MR/10

Child survival Index = 1000- U5MR/ 10; current value is = (1000 – 43)/ 10 = 957/ 10 = 95.7

536. A. 25

Data (as on 01.03.2019): is updated periodically so wait for last look for recent updates

- MMR: 130/ 1 lakh live births
- NMR: 25/ 1000 live births
- ENMR: 20
- LNMR: 5
- Post Neonatal Mortality rate: 9/ 1000 live births
- Life span (India): GBD 2015 data
- Males = 68.8 years
- Females = 71.1 years
- Under 5 mortality rate: 43/ 1000 live births
- Female sex ratio (adult): 943
- Female sex ratio (0- 6 years): 929

537. C. Postpartum

Most common period is post partum period

538. D. All

Out of options given all will contribute to reduction of U5MR

539. D. Total deaths

$$\text{Proportional mortality} = \frac{\text{Number of deaths in 0- 5 year age group}}{\text{Total number of deaths}} \times 1000$$

540. C. Neonatal tetanus

Out of the options neonatal tetanus leads to perinatal mortality

541. A. 100

$$IMR = \frac{\text{Number of Infant deaths (0- 1 year)}}{\text{Number of Live Births}} * 1000 = \frac{15 * 1000}{150} = 100$$

Number of live births = 5000 * 30/ 1000 = 150

542. B. August

Breast feeding week is celebrated in the 1st week of august

543. A. Acute malnutrition

Underweight/ low weight for age (Acute + Chronic Malnutrition)	
Acute	Chronic
Low weight for height	Low height for age
Wasting/ Emaciation	Dwarfing/ Stunting
15.1%	38.7%

544. C. Haemoglobin> 11gm%

Out of the options haemoglobin > 11 represents a normal value

545. C. MRGS

In India we now use the Multi centric growth reference study which is a Z score based weight for age chart

546. A. Weight for age

Weight provides details of acute malnutrition whereas height provides details of chronic malnutrition

547. B. 1-5 years

MAC is constant during 1- 5 years so it is used for assessing age independent indicator of malnutrition

548. B. David Morley

Morley had given the growth chart

549. A. Dental ailments

Health disorders among school children: Dental defects (MC)> goitre> malnutrition

550. D. One urinal for 10 students and one latrine for 25 students

Healthful school environment:

- Area: 5 acres (primary), 10 acres (higher elementary), additional 1 acre/ 100 students
- Walls: 10 inch thick & heat resistant
- 1 class room per 40 students
- Per capita space: > 10 square feet
- Minus type desks, with chairs with back rest
- Doors & Windows area > 25% floor area
- Height of windows: 2- 6 inches
- Colour: light, Lighting: from left side
- Lavatory: 1 urinal per 60 students & 1 latrine per 100 students
- Ventilators: > 2% floor space

551. B. Mother to initiate breast feeding within 2 hours of normal delivery

EBF should be initiated as soon as possible (NVD it is 30 minutes and LSCS it 1 hour)

552. D. Ministry of Women and Child Development

Scheme	Ministry
RSBY	MOHFW
All national programmes in PSM	
FSSAI	
Bioterrorism	
MGNREGA (M. of rural development)	Ministry of Labour & Employment
ESI	
ICDS	Women & Child Development
IGMSY	
SABLA	
Nirbhaya fund	
BBBP (Beti Bachao Beti Padhao)	
Ujjawala	
Mid day meal program	Ministry of Education/ HRD
Bio medical waste management	Ministry of Environment, Forests and Climate Change
Production of iodised salt	Ministry of industry
Disaster Management, census	Home Ministry
Borstals (obsolete)	State Inspector General of Prisons

553. D. Neonatal tetanus

Neonatal tetanus is prevented by maintaining cleans during delivery

554. D. Anganwadi

ICDS is implemented at the anganwadi

555. D. USA

MFHI was initiated in USA

556. B. 5

Age Group
3- 6 years
< 3 years
11- 19 years female
20- 45 years

557. A. Covers population of 5000

Anganwadi covers a maximum population of 800

558. C. Prevention of iodine deficiency disorders

Interventions:

- S: Supplementary Nutrition
- H: Health check up
- I: Immunization
- Ne: Non formal education
- R: Referral
- He: Health education

559. C. Two months

IMNCI is divided into 2 modules – one of 0- 2 months and other of 2 months to 5 years

Nutrition – Questions

560. The recommended daily energy intake of an adult pregnant woman with heavy work is:

a. 2100 kcal b. 2500 kcal
c. 3200 kcal d. 2900 kcal

561. In calculating RDA for a particular nutrient, 2 SD are not added for:

a. Iron b. Calcium
c. Energy d. Vitamin A

562. For a 60 kg Indian male, the minimum daily protein requirement has been calculated to be 40 g (mean) & 10 (Standard deviation). The recommended daily allowance of protein would be:

a. 60 g/day b. 70 g/day
c. 40 g/day d. 50 g/day

563. In 13-15 year female child, recommended daily protein intake (gm/kg/day) is:

a. 0.68 b. 0.87
c. 1 d. 1.33

564. Reference weight of Indian men and women is:

a. 60 and 50 kg b. 55 and 50 kg
c. 65 and 55 kg d. 60 and 55 kg

565. Which one of the following is the best indicator of protein quality for recommending the dietary protein requirement?

a. Protein- efficiency ratio
b. Biological value
c. DIASS
d. Net protein utilization

566. The optimum calories to be provided by proteins should be:

a. 5-10% b. 10-15%
c. 15-20% d. 20-30%

567. International food standards is:

a. BIS standards
b. Codex alimentarius
c. Agmark standards
d. PFA standards

568. Highest protein content is in:

a. Red gram b. Black gram
c. Bengal gram d. Soya bean

569. Limiting Amino acids in wheat are:

a. Methionine and Lysine
b. Lysine and threonine
c. Threonine and methionine
d. Arginine and lysine

570. What is known as "poor man's meat"?

a. Milk b. Pulses
c. Fish d. Egg

571. Biological value is maximum of:

a. Egg b. Milk
c. Soya bean d. Pulses

572. Biological value of Rice protein is:

a. 52 b. 67
c. 80 d. 100

573. Cereals and proteins are considered complementary since:

a. Both are deficient in methionine
b. Cereals are deficient in methionine and pulses are deficient in lysine
c. Cereals are deficient in lysine and pulses are deficient in methionine
d. Both cereals and pulses contain threonine

574. Amount of cereals provided in Mid-day meal program for upper primary school children is:

a. 50 grams b. 75 grams
c. 125 grams d. 150 grams

575. In assessing the nutrition status of community the following are used except :

a. Mortality in 1-4 years age group

560. c	561. c	562. a	563. b	564. d	565. c	566. c	567. b	568. d	569. b
570. b	571. a	572. b	573. c	574. c	575. a				

b. Low birth weight
c. Weight/ height index in preschool children
d. Percentage of pregnant lady with less than 9.5% Hb

576. Nutritional status of community is measured by all except :
a. Mid arm circumference in 0-1 year age group
b. Anemia detection in pregnancy
c. Child birth weight < 2500gms
d. Height and weight calculated in < 5 years age group

577. Under National programme for prevention of nutritional blindness, a child in the age group of 6-11 months is given a mega dose of vitamin A equal to :
a. 50,000 IU b. 1 Lakh IU
c. 1.5 Lakh IU d. 2 lakh IU

578. Methylene blue test is used to detect:
a. Micro oganisms
b. Lactose
c. Protein
d. Sugar

579. Under national immunization schedule total dose of Vitamin A given to a Child is :
a. 15 lac IU b. 16 lac IU
c. 19 lac IU d. 17 lac IU

580. Vitamin - A solution contains :
a. 25,000 IU per ml
b. 50,000 IU per ml
c. 1,00,000 IU per ml
d. 2,00,000 IU per ml

581. Xerophthalmia is a problem in a community if the prevalence of Bitot's spots is more than
a. 1% b. 0.5%
c. 5% d. 25%

582. Minimum amount of sunlight exposure necessary for adequate synthesis of vitamin D in the human body is :
a. 7 min b. 30 min
c. 2 hrs d. 5 hrs

583. Compared with cow's milk, mother's milk has more :
a. Lactose b. Vitamin D
c. Protein d. Fat

584. Match list I correctly with List D and select your answer using the codes given below :

List I	List D
a. Papaya fruit	I. Calcium
b. Soya beans	II. Vitamin C
c. Ragi	III. Protein
d. Amla fruit	IV. Vitamin A

a. A-I,B, III, CII , DIV
b. A-IV, B-III C-I, D-II
c. A-IV, BI, C-III , DII
d. A-I, B-III, C- IV , d-IV

585. Fish is the source of all except :
a. Iron b. Iodine
c. Vitamin A d. Phosphorus

586. Tomatoes are rich in :
a. Oxalic acid b. Citric Acid
c. Acetic acid d. Formic acid

587. Highest calorie content is found in :
a. Banana b. Apple
c. Guava d. Orange

588. True about midday meal programme:
a. Provides ½ the total energy requirement & 1/3 the total protein requirement in a child
b. Substitute for home diet
c. Main objective of this scheme is to eliminate malnutrition
d. None of the above

589. Dietary changes advocated by WHO for prevention of heart diseases include all of the following except:
a. Decrease in complex carbohydrate consumption
b. Reduction in fat intake to 20-30% of caloric intake
c. Consumption of saturated fats be limited to less than 10% of total energy intake
d. Reduction of cholesterol to below 100 mg per 1000 kcal/ day

576. a	577. b	578. a	579. d	580. c	581. b	582. a	583. a	584. b	585. b
586. a	587. a	588. a	589. d					

FOOD ADULTERANTS

590. Endemic ascites is caused by :

a. Aflatoxin
b. Sanguinarine
c. Pyrrolizidine
d. Ergot alkaloid

591. BOAA contains which amino acid:

a. Aspartate
b. Arginine
c. Alanine
d. Butyrate

592. Ingestion of which of the following can result in ergotism?

a. Bajra
b. Maize
c. Kesari dal
d. Mustard

593. Argemona oil contamination of mustard oil can be detected by:

a. Phosphatase test
b. Nitric acid test
c. Coliform test
d. Methylene blue test

IODINE

594. 1 gram of twin fortified salt's provides:

a. 1 mcg iodine + 40 mg iron
b. 40 mcg iodine + 40 mg iron
c. 1 mcg iodine + 1 mg Iron
d. 40 mcg iodine + 1 mg iron

595. Level of Iodization of salt as per government rules:

a. 90 ppm at production level & 60 ppm consumer level
b. 60 ppm at production level & 15 ppm at consumer level
c. 30 ppm at production level & 60 ppm at consumer level
d. 30 ppm at production level & 15 ppm at consumer level

596. Iodized oil (usual dose of 1 mg i/m) gives protection for :

a. 3-4 weeks
b. 3-4 months
c. 3-4 years
d. 10-12 years

597. Daily requirement of iodine in adults is :

a. 50 mcg
b. 100 mcg
c. 150 mcg
d. 200 mcg

598. Endemic cretinism is seen when iodine uptake is less than:

a. 5 micro gram/day
b. 20 micro gram/day
c. 50 micro gram/day
d. 75 micro gram/day

FLUORINE

599. True regarding fluorosis symptom

a. Mottling of dental enamel more than 1.5 mg/l
b. Skeletal fluorosis – 3 – 6 mg/l
c. Crippling fluorosis – more than 10 mg/l
d. All of these

600. Dental fluorosis is best seen in:

a. Central & lateral incisors
b. Central incisors & 1st molars
c. 1st& 2nd molars
d. Canines

601. Deflouridation of water is done by which technique:

a. Nalgonda
b. Nakpur
c. Patna
d. Kasauli

CALCIUM

602. Adult non-pregnant female requires, calcium per day:

a. 400 mg
b. 600 mg
c. 800 mg
d. 1000 mg

603. Highest calcium concentration is present in:

a. Dates
b. Guava
c. Amla
d. Mango

EGG

604. Egg are "reference protein" because:

a. High caloric content
b. Increased protein / 100 gms
c. Increased biological value and positive NPU
d. Decreased digestibility coefficient

605. Egg is poor in:

a. Protein
b. Carbohydrate & vitamin C
c. Calcium & iron
d. Fats

590. c	591. c	592. a	593. b	594. d	595. d	596. c	597. c	598. b	599. d
600. b	601. a	602. b	603. a	604. c	605. b				

MISCELLANEOUS

606. Poor source of Iron is in :

a. Butter
b. Green leafy vegetable
c. Jaggery
d. Meat

607. Daily requirement for dietary fiber by an adult is approx :

a. 1 gm
b. 4 gms
c. 40 gms
d. 100 gms

608. All are examples of Food Fortification except:

a. Iodization of salt
b. Vitamin A in Vanaspati
c. Fluoridation of water
d. Saffron colour in milk

609. Pasteurization by holder method is heating milk at:

a. 60° C for 45minutes
b. 63° C for 30minutes
c. 100° C for 15minutes
d. 136° C for 15minutes

606. a	607. c	608. d	609. b

560. C. 3200 kcal

Amount of calorie = 2850 + 350 = 3200 kCal

Activity	Males		Females	
	Calorie (kCal)	Fat (g/d)	Calorie (kCal)	Fat (g/d)
Sedentary	2300	25	1900	20
Moderate	2700	30	2200	25
Heavy	3500	40	2850	30

Activity	Pregnant
	Extra Calorie (kCal)
Pregnant	+ 350 (1st trimester: 0 > + 150 – earlier)
Lactation (0- 6 month)	+ 600
Lactation (6- 12 month)	+ 520

561. C. Energy

As RDA covers 97.5% of the entire population; so for energy we don't do it as the entire population has variety of people with different levels of activity

562. A. 60 g/day

RDA = Mean + 2 SD = 40 + 2 * 10 = 60

563. B. 0.87

Protein requirement (new guidelines): * g/kg/d of veg protein

- Adult man/ woman: 0.83 (0.7 in terms of egg protein)
- Adolescent girls: 0.86
- Adolescent boys: 0.88
- 6- 10 years: 0.91
- 1- 5 years: 0.94

564. D. 60 and 55 kg

Reference Indian Human

Parameters	Man	Woman
Age (in years)	18- 29	18- 29
Weight (in kgs)	60	55
Height (in metre)	1.73	1.61
BMI	20.3	21.2
Recommended PE Ratio (Protein Energy Ratio)	8.3%	9.1%
Others	Free from disease	
	Fit for active work	
	Engaged in 8 hours of moderate activity occupation	
	8 hours in bed	
	4- 6 hours sitting & moving about	
	2 hours of walking & active recreation/ household duties	

565. C. DIASS

Methods of Protein assessment:

- **Best indicator** for protein quality and efficiency: DIAAS (Digestibility indispensable amino acid score)
- Protein Digestibility Corrected Amino acid score (PDCAAS): **most accepted**

566. C. 15-20%

Distribution of Calories in Normal Diet

Foodstuff	Percentage of total calories
Carbohydrate	55-65
Protein	15-20
Fats	20-25

567. B. Codex alimentarius

- Codex Alimentarius Commission
  - Inter- governmental global body of FAO & WHO
- In India we now have the FSSAI
  - Agmark & Bureau of Indian Standards: voluntary
  - PFA/ prevention of food adulteration act, 1954 (now no more in use)

568. D. Soya bean

Soyabean: Richest pulses:

- 43.2% protein (NPU = 55), 20% fats
- Limiting a.a. = Methionine
- Rich source of calcium, iron & vitamin B

569. B. Lysine and threonine

Food item	Limiting amino acids
Cereals	Threonine & Lysine
Pulses	Methionine & Cysteine
Maize	Tryptophan & Lysine

570. B. Pulses

Pulses have high amount of protein in the vegetarian domain

571. A. Egg

Egg has maximum NPU and therefore considered as a reference protein

572. B. 67

Rice:

- BV of rice protein is 67
- Rice proteins are better than other cereal proteins as comparatively richer in lysine

573. C. Cereals are deficient in lysine and pulses are deficient in methionine

Concept of complementary food is that component missed in one item is covered in the other item

574. C. 125 grams

New recommendations are the reduction of cereal intake from 100 grams to 90 grams for primary school children & 150 grams to 125 grams for upper primary school children

575. A. Mortality in 1-4 years age group

Of the options provided mortality is the best answer as most common cause of mortality in 1- 4 year age group is pneumonia

576. A. Mid arm circumference in 0-1 year age group

MAC is assessed in 1- 5 year age group

577. B. 1 Lakh IU

Below the age group of 1 year we give 1 lakh IU & after 1 year we give 2 lakh IU

578. A. Micro oganisms

Methlylene blue reduction test:

- Indirect method of detection of micro organisms in milk
- Test is carried out on milk accepted for pasteurization
- Blue colour disappears from milk when held at a uniform temperature of 37 C
- Milk remaining blue for longest time is of best quality

579. D. 17 lac IU

9 doses (1 dose at 9 month of age with 1 lakh IU; then at every 6 monthly interval with 2 lakh IU so a total of 17 lakh IU)

580. C. 1,00,000 IU per ml

1 ml has 1 lakh IU in Vitamin A solution

581. B. 0.5%

Criteria for assessing the public health significance of Xerophthalmia and Vitamin A deficiency

Criteria	Minimum prevalence among children < 6yrs in the community
Clinical (primary)	
Night Blindness (XN)	1.0%
Bitot's spot (X1B)	0.5%
Corneal Xerosis and/or ulceration/ keratomalacia (X2+ X3A+ X3B)	0.01%
Xerophthalmia related corneal scars (XS)	0.05%

Biochemical (supportive)	
Serum retinol (Vitamin A) less than 0.35 micromol/ L (10 microgm/dl)	**5.0%**

582. A. 7 min

7 minute is the time enough for adequate synthesis if Vitamin D in human body

583. A. Lactose

Cow vs Human Milk

Constituent	Cow	Human
Energy (kcal)	67	65
Fat (g)	4.1	3.4
Protein (g)	3.2	1.1
Calcium (g)	120	28
Iron (mg)	0	0.2
More of	Water; Na & K	Carbohydrates (lactose); Essential fatty acids; Vitamin A & C; PUFA; Csyteine & taurine; Better calcium & iron bioavailability (70%)

- Fat, protein, energy content of milk: Buffalo> Goat> Cow> Human
- Lactose content of milk: Human> Buffalo> Goat> Cow
- Vitamin Deficient in Milk: If only milk is mentioned it is Vitamin C, & for breast milk it is Vitamin K & D
- Exclusively fed on cow's milk: Fe deficiency

584. B. A-IV, B-III C-I, D-II

List of Important Food Items Have Maximum Amounts of Dietary Components

Food Item	Maximum in
Dates	Calcium
Pistachio/ pista	Iron
Indian goose berry (Amla)	Vitamin C
Gingelly seeds> Groundnut	Vitamin B1
Sheep liver oil	Vitamin B 2
Halibut fish liver oil> cod liver oil	Vitamin D & A
Safflower oil> sunflower oil	Linoleic acid/ EFA
Flaxseed oil	Linoleic acid
Fish	Eicosapentaenoic acid

585. B. Iodine

Fish

- Richest source of vitamin A & D
- Rich source of proteins, calcium, phosphorous, fluoride, iron
- Poor source of carbohydrates, iodine

586. A. Oxalic acid

Tomatoes are rich in oxalic acid & therefore a common cause for renal stones

587. A. Banana

Of all the fruits banana & mango are rich in calories

588. A. Provides ½ the total energy requirement & 1/3 the total protein requirement in a child

Mid Day Meal Program:

- Principle for formulating mid day meal:
- Only a supplement not substitute for home food
- Provide 1/3rd calories & ½ proteins
- Cheap & simple cooking of locally available foods
- Changing menu
- Main objective: Attract more children for admission to school & retain them for literacy
- Ministry: Ministry of Education; now HRD
- Minimum 250 days per year
- Age group: 4- 12 years
- Now extended till 8 class

Primary	Primary	Upper Primary
Energy (kcal/ d)	450	700
Protein (gm/ d)	12	**20**

589. D. Reduction of cholesterol to below 100 mg per 1000 kcal/ day

Option D refers to almost 250 mg which is more than the required amount

	Adults	Cardiovascular Diseases
Total fat	< 30%	< 20%
Saturated fat	< 10%	< 7%
Sugar	< 50 gms/ day	< 30 grams/ day
Extra		• Dietary cholesterol < 200mg per day • Cholesterol/ HDL ratio < 3.5
Salt intake (iodised) < 5 grams		
400 gram (5 portions) of fruit & vegetables a day		

FOOD ADULTERANTS

590. C. Pyrrolizidine

Disease	Toxin	Adulterant
Lathyrism	BOAA*	Khesari dal (Lathyrus sativus)
Epidemic dropsy	Sanguinarine	Argemome mexicana (oil) added to mustard oil
Endemic ascites	Pyrrolizidine (Hepatotxic)	Crotalaria seeds (Jhunjhunia)
Aflatoxicosis	Aflatoxin	Aspergillus flavus/ parasiticus
Ergotism	Clavine	Claviceps fusiformis

591. C. Alanine

BOAA has the aa alanine

592. A. Bajra

Ergotism can occur by eating bajra, rye, sorghum & wheat

593. B. Nitric acid test

Epidemic dropsy can be detected by Nitric acid test but most sensitive is paper chromatography

IODINE

594. D. 40 mcg iodine + 1 mg iron

DFS/ 2 in 1 salt = 40 ug iodine + 1 mg Fe per gram of salt

595. D. 30 ppm at production level & 15 ppm at consumer level

Iodization of salt is done using potassium iodide (which is an unstable compound) so with time the amount decreases

596. C. 3-4 years

Iodised oil is obtained from poppy seed oil (protection for 4 years)

597. C. 150 mcg

RDA	Iodine (ug/ d)
Adult	150
Pregnant	250
Lactation	290

598. B. 20 micro gram/day

Endemic cretinism is seen when iodine uptake is < 20 ug/ day

FLUORINE

599. D. All of these

Clinical Condition	Fluoride level (ppm)
Dental carries	< 0.5
Recommended	0.5- 0.8
Maximum	1.5
Mottling of enamel	> 1.5
Skeletal fluorosis	3- 6
Crippling fluorosis	> 10

600. B. Central incisors & 1st molars

Fluorosis is seen in central incisors & 1st molars of upper jaw

601. A. Nalgonda

Nalgonda technique; lime is added first & then the alum

CALCIUM

602. B. 600 mg

Person	Calcium (mg/d)
Man	600
Woman	600
Pregnant	+ 600
Lactation (0- 6 mth)	
6- 12 mth	
Infant (0- 6 mth)	500
6- 12 mth	

603. A. Dates

Dates have the highest amounts of calcium

EGG

604. C. Increased biological value and positive NPU

Net protein utilization for egg is almost 100 (NPU = 96)

605. B. Carbohydrate & vitamin C

Egg:

- Weight = 60 grams; Energy = 70 kCal
- 6 grams proteins, 6 grams fat, 30 mg calcium, 1.5 mg iron, 250 mg cholesterol
- NPU = 96 (reference protein because of increased BV & positive NPU)
- Rich source of cholesterol
- Poor source of Vitamin C & Carbohydrates

MISCELLANEOUS

606. A. Butter

Butter is source of fat

607. C. 40 gms

For adults it is 40 grams & for diabetic patients it is 48 grams

608. D. Saffron colour in milk

Food Fortification

- Primary level prevention
- Example:
- Salt iodisation
- Vitamin A & D in Vanaspati (2500 IU Vitamin A & 175 IU Vitamin D per 100 grams
- Criteria for food fortification:
- Vehicle must be regularly consumed
- Amount of fortification must not cause deficiency/ toxicity
- On addition of nutrient there is no change in taste, odour
- Cost must be affordable to consumers

609. B. 63° C for 30minutes

Method	Temp. O C	Time	Comments
Holder/ Vat	63	30 min	Small/ Rural
HTST/ Flash	72	> 15 sec	MC, Large
HHST	68	30 min	Batch
UHT	125	Few secs	Heating in 2stages, 2nd stage under pressure

Test of Pasteurization: Adequacy

- Phosphatase: MC
- Standard plate count: 30,000 per ml
- Coliform: 0 per ml

Sociology – Questions

610. 'Learned behavior which is socially acquired' is known as:

a. Customs
b. Acculturation
c. Standard of living
d. Culture

611. Relationship between the disease and social conditions is described by:

a. Socialism
b. Acculturation
c. Social Pathology
d. Social Defence

612. Acculturation may take place by:

a. Education
b. Industrialization
c. Trade and commerce
d. All of the above

613. An organized group of people with social relationship:

a. Community b. Association
c. Society d. Family

614. Change in the affective level after communication and health education means change in:

a. Knowledge b. Attitude
c. Skills d. All

615. Inner subjective thought of a person towards an individual or a situation is best described as:

a. Attitude b. Value
c. Belief d. Opinion

616. According to Maslow's hierarchy of needs, following is at the top of pyramid:

a. Physical needs
b. Self-actualization
c. Safety
d. Esteem recognition

617. 'Moron' is one with an IQ of:

a. 0-24 b. 25-49
c. 50-69 d. 70-79

618. Term Social Medicine was introduced by

a. Jules Guerin b. Crew
c. John Ryle d. Alfred Grotjhan

619. Following is true about the term new families:

a. It is a variant of three generation family
b. It is applied to all nuclear families of less than 10 years duration
c. It is a variant of joint family
d. It is applied to all nuclear families less than 2 years duration

610. d	611. c	612. d	613. c	614. b	615. c	616. b	617. c	618. a	619. b

Sociology – Explanations

610. D. Culture

Custom: established pattern of behaviour that can be objectively verified within a particular social setting

a. Folkways: Right ways of doing things in less vital areas of human conduct

b. Mores: more stringent customs

611. C. Social Pathology

Social Pathology: Study relationship between disease & social factors

612. D. All of the above

Acculturation: cultural contact/ mixing of 2 cultures due to education, industrialization, trade & commerce

613. C. Society

Society: organized group of people with social relationship or system of relations between individuals

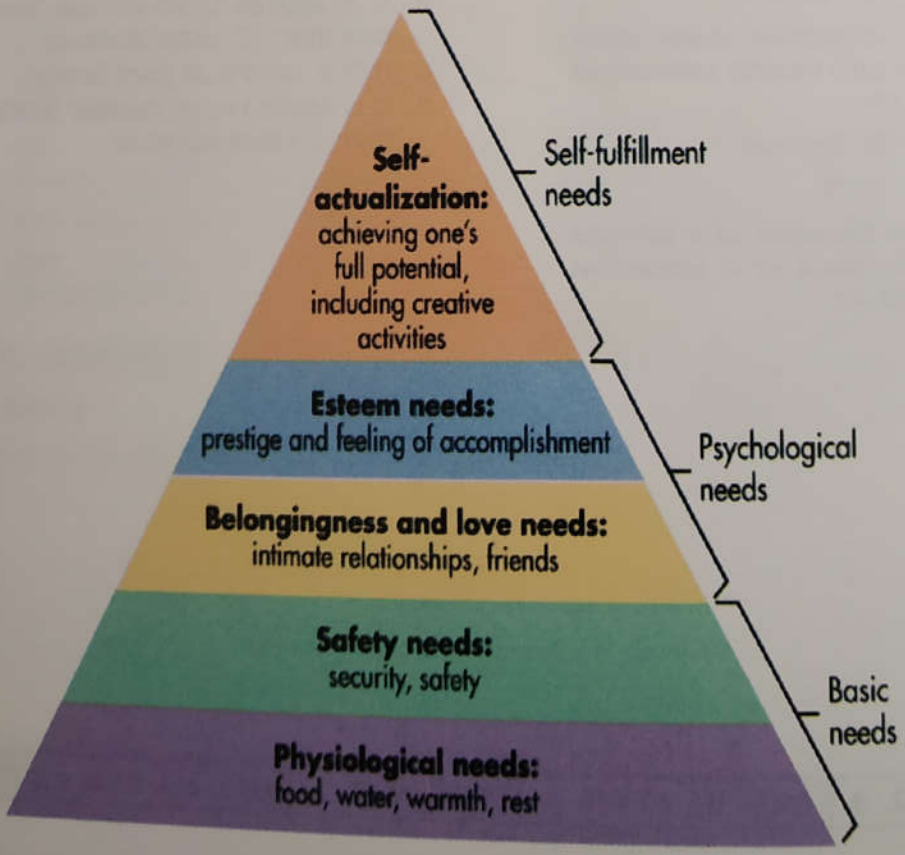
614. B. Attitude

Types	Associations	Example
Cognitive	Knowledge	MCQ's
Affective	Attitudes, Emotions	
Psychomotor	Skills (physical & manual skills)	U S M L E Step III

615. C. Belief

Term	Definition
Opinions	Temporary Subjective Views
Belief	Permanent Subjective Views
Attitude	Permanent Objective Acquired Caught (not taught)
Habits	Accustomed Acquired Automatic way of doing things

616. B. Self-actualization


Self-actualization: achieving one's full potential, including creative activities
Esteem needs: prestige and feeling of accomplishment
Belongingness and love needs: intimate relationships, friends
Safety needs: security, safety
Physiological needs: food, water, warmth, rest
Self-fulfillment needs
Psychological needs
Basic needs

617. C. 50-69

Level of Intelligence	IQ Range
Idiot	0- 24 (help to stay alive)
Imbecile	25- 49
Moron	50- 69 (special school)
Borderline	70- 79
Low normal	80- 89
Normal	90- 109
Superior	110- 119
Very superior	120- 139
Near genius	140 & over
Mental status	IQ Range
Normal	≥ 70
Mild	50- 69
Moderate	35- 49
Severe	21- 34
Profound	≤ 20

618. A. Jules Guerin

Socialized Medicine:

- Means that the government provides all aspects of healthcare:
  - Govt. pays for all the care (medical care: free for patients)
  - Employs providers (prevents competition among physicians)
  - Ensures social equity: universal coverage
  - Elucidates the role of social factors in disease aetiology
  - Mostly confined to academic study of health services
  - Concept first introduced by "Jules Guerin"

619. B. It is applied to all nuclear families of less than 10 years duration

New family:

a. Nuclear family

b. Less than 10 years of marriage

c. Important for family planning

Environment and Health – Questions

WATER

620. Purest water in nature is:

a. River water
b. Rain water
c. Deep well
d. Impounding reservoirs

621. All the following statements are true about break point chlorination, except:

a. Free chlorine is released in water after break point
b. Chlorine demand is the amount needed to kill bacteria oxidize organic matter and neutralize ammonia
c. 1 ppm free chlorine should be present in water after break point has reached
d. Contact period of 1 hour is necessary

622. Nitrates in excess of may cause infantile methaemoglobinaemia:

a. 15 mg/l b. 25 mg/l
c. 35 mg/l d. 50 mg/l

623. All the following provide evidence of faecal pollution except:

a. Faecal streptococci
b. Coliform
c. Cl. tetani
d. Enteropathogenic virus

624. Per capita allowance for urban area of water per day is recommended at:

a. 70-80 lit b. 80-120 lit
c. 120-150 lit d. 150-200 lit

625. Recommended standard for bacterial water quality in small community supplies is:

a. No coliform
b. No E coli in 100 ml
c. Coliform less than 10/100 ml
d. Coliform Less than 5/100 ml

626. Temporary hardness of water is primarily due to the presence of:

a. Calcium and magnesium sulphates
b. Calcium and magnesium chlorides
c. Calcium and magnesium bicarbonates
d. Calcium and magnesium nitrates

627. Horrock's apparatus estimates:

a. Free chlorine
b. Combined chlorine
c. (A)+(B)
d. Chlorine demand

628. Ortho toluidine test is used to determine:

a. Nitrates in water
b. Nitrites in water
c. Free and combined chlorine in water ammonia content in water
d. Ammonia content in water

629. Most desired temperature range for drinking water is:

a. 0-5°C b. 5-10°C
c. 10-15° C d. 15-20°C

630. Most undesirable metal in drinking water is:

a. Iron b. Copper
c. Zink d. Lead

631. Scabies, an infection of the skin caused by Sarcoptes scabei, is an example of:

a. Water borne disease
b. Water washed disease
c. Water based disease
d. Water related disease

632. All are true for rapid sand filters except:

a. No preliminary storage of raw water is required
b. Operation requires highly skilled persons
c. Frequent washing is not required
d. Can be gravity types of pressure

633. Disinfecting action of chlorine on water is mainly due to:

a. Hydrogen chloride
b. Hypochlorous acid
c. Hypochlorite ions
d. Hydrogen ions

620. b	621. c	622. d	623. c	624. d	625. b	626. c	627. d	628. c	629. c
630. d	631. b	632. c	633. b						

634. Which of the following agents have residual germicidal effect when used for disinfection of water?

a. Chlorine
b. Chlorine and Ozone gas
c. Chlorine and UV radiation
d. Chlorine Ozone gas and UV radiation

635. Indicator solution in Horrock's Apparatus contains:

a. Ortho toulidine
b. Starch iodide
c. Ortho toulidine arsenite
d. Bromocresol purple

636. Minimum recommended dose of free residual chlorine in water for routine chlorination is:

a. 0.5 mg/ L for a contact period of 1hr
b. 0.5 mg/ L for a contact period of ½ hr
c. 1.0 mg/ L for a contact period of 1 hr
d. 1.0 mg/ L for a contract period of ½ hr

637. True statement regarding chlorination is:

a. Orthotolidine test measures combined chlorine separately
b. Chlorine acts best when pH is around 7.0
c. It kills bacteria, viruses and spores
d. Hypochlorite ions are mainly responsible for disinfecting activity

638. What is the amount of bleaching powder required to disinfect 455 liter of water if 4, 5, 6 cups shows distinct colouration in Horrock's apparatus:

a. 2 g
b. 6 g
c. 8 g
d. 4 g

639. In a slow filter, the element responsible for yielding bacteria free water is the:

a. Valve
b. Vital layer
c. Supernatant water
d. Under-drainage system

640. Nalgonda technique for defluroridation is what sequence:

a. Lime then Alum
b. Soda then Alum
c. Alum then Soda
d. Alum then Lime

641. Confirmatory Test for coliform count:

a. Eijkman test
b. Casoni's test
c. Nitrate test
d. Urease test

642. Test for recent contamination of water is

a. Nitrates
b. Nitrites
c. Ammonia
d. Chlorides

643. Fresh bleaching powder contains:

a. 33% chlorine
b. 3.3% chlorine
c. 0.33% chlorine
d. 0.033% chlorine

644. All the following assess the water-quality-criteria for water pollution are all Except:

a. Solid particles
b. Dissolved oxygen
c. Dissolved chloride
d. Dissolved nitrogen

645. Effective size of sand in rapid sand filter is:

a. 0.2 mm
b. 0.5 mm
c. 0.8 mm
d. 0.1 mm

646. When river water is stored for the first 5-7 days, the bacterial count drops by as much as:

a. 25%
b. 50%
c. 90%
d. 100%

647. Most effective water treatment method in rural area:

a. Rapid sand filter
b. Slow and filter
c. Chlorination of water
d. Ozonization

648. Drawback of ozone as water disinfectant is:

a. No virucidal effect
b. Long time period for action
c. Teratogenitcity
d. No residual action

634. a	635. b	636. a	637. b	638. c	639. b	640. a	641. a	642. b	643. a
644. a	645. b	646. c	647. c	648. d					

649. Criteria for "Problem village" include all except:

a. Where no water source in a distance of 1.6 km from community
b. Water is more than depth of 15 meter
c. There is excess of Na+, K+, F+ salts
d. BOD slightly de- ranged

AIR

650. Psychrometer is used to measure:

a. Humidity
b. Air velocity
c. Room temperature
d. Radiant heat

651. All are indicators of air pollution except:

a. Soiling index
b. Mc Ardle's index
c. Suspended particle count
d. SO_2 Concentration

652. Mc Ardle's maximum allowable sweat rate is:

a. 1 lit/ 4 hours
b. 4 lit/ 1hours
c. 4.5 lit/ 4hours
d. 4.5 lit/ 8 hours

653. Kata thermometer measures:

a. Air temperature only
b. Air temperature and humidity
c. Air temperature, humidity and air movement
d. Air velocity only

654. 'Cooling Power' of air is measured by:

a. Kata thermometer
b. Hygrometer
c. Anemometer
d. Sling's Psychrometer

655. The mean radiant temperature is measured by:

a. Dry bulb thermometer
b. Wet bulb thermometer
c. Six's maximum and minimum thermometer
d. Globe thermometer

656. Global warming true is:

a. CO_2 is major greenhouse gas
b. Stratosphere ozone layer is harmful
c. CFC increases stratosphere ozone layer
d. Kyoto protocol called for 20% reduction in greenhouse emissions

657. The best parameter to measure air pollution is:

a. SO_2 b. CO_2
c. CO d. N_2O

658. Acceptable level for physical comfort:

a. Corrected effective temperature 77-80 F
b. Corrected effective temperature 70-76 F
c. Corrected effective temperature 80-81 F
d. Corrected effective temperature >82 F

659. Which agency monitors air quality in India?

a. Central Research Institute
b. Ministry of Health and Family Welfare
c. National Environmental Engineering Research Institute
d. Central Pollution Control Board

660. In winter, water vapours and pollutants comes to lie in the lowermost layer atmosphere by:

a. Acid rain
b. Greenhouse effect
c. Temperature inversion
d. Ocean effect

661. At which level of heat stress index it is not possible to work comfortably causing thereat to health:

a. 20-40 b. 40-60
c. 60 – 80 d. 80-100

662. Number of air changes in a drawing room per hour should be at least:

a. 2-3 b. 3-4
c. 4-5 d. 5-6

663. In indoor air pollution, carbon monoxide is produced by:

a. Combustion equipment
b. Stove
c. Gas heaters
d. All of the above

649. d	650. a	651. b	652. c	653. c	654. a	655. d	656. a	657. a	658. a
659. d	660. c	661. b	662. a	663. d					

664. CO_2 in air measured by:
a. Manometer b. Hygrometer
c. Kiffer test d. None

MISCELLANEOUS

665. Whispering produces a sound of:
a. 20-30 dB b. 30-40 dB
c. 40-50 dB d. 50-60 dB

666. The minimum floor space recommended per adult person in a dwelling place is:
a. 50-100 s ft. b. 101-450 s ft.
c. 151-200 s ft. d. 201-250 s ft.

667. Venturimeter is used to measure:
a. Air velocity
b. Size of suspended particles in the air
c. SO2 content in the atmosphere
d. Bed resistance in a low sand filter

668. Soiling index is a measure of:
a. Soil pollution
b. Water pollution
c. Noise pollution
d. Air pollution

ENTOMOLOGY

669. Mites are the vectors of the following disease except:
a. Scabies
b. Scrub typhus
c. Ricketsial pox
d. Kyasanur forest disease

670. Pyrethrum is a:
a. Contact poison
b. Stomach poison
c. Both a+ b
d. Space poison

671. Match the following method of mosquito control example:

	Control		
A	Biological	I	Mosquito larvicidal oil
B	Biological	II	Bacillus thuringinsis
C	Chemical	III	Source reduction
D	Environmental	IV	Barbados million

a. A- I , B- II, C- IV , D- III
b. A-III ,B-I ,C- IV ,D-II
c. A- I , B-IV ,C- II, D-III
d. A – III , B-II , C-IV , D- I

672. Mosquitoes that breed in dirty water collection are:
a. Anopheles b. Culex
c. Aedes d. Mansonia

673. Example of cyclopropagative transmission is:
a. Plague bacilli in the flea
b. Malarial parasite parasite in mosquito
c. Microfilaia in mosquito
d. Guineaworm embryo in Cyclops

674. Which of the following is incorrectly matched?
a. Agent changes in form and number: cyclo propagative transmission
b. Agent merely multiplies in vector but no developmental form change multiplication: cyclo developmental transmission
c. Agent undergoes only development but no multiplication: cyclo developmental transmission
d. Agent transmitted from nymph to adult vector: Transovarial transmission

675. All of the following statement about mosquito are true except:
a. It is a definitive host in malaria
b. It is a definitive host in filarial
c. Its life cycle is completed in 3 weeks
d. Female can travel up to 3 kilometer

676. Which of the following flies do not bite?
a. Sand fly b. Housefly
c. Blackfly d. Tse tse fly

677. Which of the following files is found in cracks and crevices of walls during daytime?
a. Sand fly b. House fly
c. Blackfly d. Tse tse fly

664. c	665. a	666. a	667. d	668. d	669. d	670. a	671. b	672. b	673. b
674. b	675. b	676. b	677. c					

678. All of the following disease are caused by Soft Tick except:
a. Tularemia
b. Q fever
c. Relapsing fever
d. KFD

679. Most cost effective approach to control of arthropods is:
a. Environmental control
b. Chemical control
c. Biological control
d. Genetic control

680. Flight range for aedes mosquito is:
a. 10 meters b. 100 meters
c. 400 meters d. 11 KMS

681. True about paris green for mosquito control is:
a. It is used as an anti-adult measure
b. It is more effective against anopheles
c. In usual doses also it harms fish man and domestic animal
d. It is a nerve poison

682. All of the following methods are anti larval measure except:
a. Intermittent irrigation
b. Paris green
c. Gambusia affinis
d. Pyrethrum

683. Organosphosphate insecticides are all except: (MUTLIPLE ANSWERS)
a. Dieldrin b. Fenthion
c. Diazinon d. Chlorpyrifos

684. Which of the following is not DDT resistant :
a. Musca domestica
b. Phlebotomus
c. Culex mosquito
d. Anopheles stephensi

685. All of the following are deliberate measures of mosquito control except:
a. Use of alkaline soap water
b. Use of larvicidal agents
c. Community participation
d. Use of bed nets for mosquito

686. Vectors do not transmit infection by:
a. Ingestion
b. Regurgitation
c. Rubbing
d. Contamination with body fluids

687. Least toxic organophosphorus compound is:
a. DDT b. Paris green
c. Malathion d. Parathion

688. Which of the following statement regarding DDT is false:
a. Pyrethrum has synergistic action
b. It is a contact poison
c. Immediately kills the prey
d. Residual effect lasts 18 months

689. Which of the following disease is transmitted globally by anopheles, culex and aedes mosquitoes?
a. Malaria b. Yellow fever
c. Dengue fever d. Filariasis

690. Percentage of para – para isomer in DDT is:
a. 20-30% b. 40-50%
c. 60-70% d. 70-80%

691. Mineral oils are used in mosquito control measure as a:
a. Personal protection method
b. Larvicide
c. Adulticide
d. Space spray

692. The anopheles species most commonly found in coastal regions is:
a. Anopheles philippinensis
b. Anopheles stephensi
c. Anopheles fluviatilis
d. Anopheles minimums

693. Most efficient anti larval measure to prevent urban malaria is:
a. Clean draining and sewerage system
b. Cover overhead tanks properly
c. Filling cesspools and ditches
d. Cover pits

694. The most prevalent mosquito - born viral disease in India:

678. a	679. a	680. b	681. b	682. d	683. a	684. b	685. a	686. a	687. c
688. c	689. d	690. d	691. b	692. b	693. b	694. a			

a. Dengue fever
b. Japanese 'B' encephalitis
c. Filariasis
d. Chikungunya

695. Best way to control houseflies:

a. Eliminate breeding places
b. Insecticide spray
c. Bed Net use
d. Paris green

696. Number of holes per square inch of a standard mosquito net is:

a. 100 b. 150
c. 250 d. 175

697. Paris Green is used to eliminate the larva of:

a. Anopheles b. Culex
c. Aedes d. Mansonoides

698. Which of the following type of mosquito can be controlled by removing and destroying the aquatic plants by herbicides?

a. Aedes b. Culex
c. Mansonia d. Anopheles

699. Most hazardous pesticide colour coding is:

a. Red b. Green
c. Yellow d. Black

695. a	696. b	697. a	698. c	699. a

WATER

620. B. Rain water

Rain water is the fresh formed water; except for the first rain collections which might get polluted if the air has high degree of pollution otherwise rain water is the purest

621. C. 1 ppm free chlorine should be present in water after break point has reached

0.5 ppm free chlorine should be present in water after break point

Amount of chlorine (ppm)	Water
0.5	Drinking water
0.7	Drinking water post disaster
1.0	Swimming pool
5.0	To kill cysotopes

622. D. 50 mg/l

Property	Nitrates	Nitrites
Guideline (mg/ dL)	< 50	< 3
Contamination	Remote	Recent
Disease	Methemoglobinemia	Blue baby syndrome

623. C. Cl. tetani

- Coli forms: Primary & most reliable bacterial indicator (E. coli is most important indicator)
- Faecal streptococci: recent contamination
- Clostridium: remote contamination

624. D. 150-200 lit

Water Requirement:

- Domestic use:
  - Urban: 150- 200 litres per capita per day
  - Rural: 40- 60 litres per capita per day
- Drinking water:
  - 2 to 3 litres per capita per day

625. B. No E coli in 100 ml

Biological Water Quality Standards:

In 100 ml water

- No sample should have E.coli
- No sample should have > 3 coliforms
- Not > 5% samples throughout year should have coliforms
- No 2 consecutive samples should have coliform organism

626. C. Calcium and magnesium bicarbonates

Temporary	Permanent
Carbonate	Non carbonate
Bicarbonate salts	Sulphates, Chlorides, Nitrate salts
Removal by: 1. Boiling 2. Lime 3. Na carbonate 4. Permutit	Removal by: 1. Na carbonate 2. Base exchange

- **Due to Ca & Mg salts**
- Expressed in terms of meq/ litre of $CaCO_3$
- 1 meq/ litre hardness = 50 mg of $CaCO_3$ (50 ppm) per litre of water
- **Softening is recommended when level of hardness > 3 meq/ litre (> 150 mg/ litre of $CaCO_3$)**

627. D. Chlorine demand

Instrument	Utility
Horrock's apparatus	Chlorine demand estimation
Chlorinator/ Chloronome	Mixing/ regulating chlorine dose
Chloroscope	Measuring residual chlorine level

628. C. Free and combined chlorine in water ammonia content in water

Ortho toluidine is the reagent used in chloroscope which tells amount of residual chlorine

629. C. 10-15° C

WHO Water Guidelines

Constituent	Guidelines	Units
Turbidity	< 1	NTU
Colour	< 15	TCU
Fluorine	1.5	ppm
pH	6.5 – 8.5	---------
Hardness	< 100- 300	mg/ litre
Total dissolved solids	< 1000	mg/ litre
Nitrates	< 50	Mg/ ltr
Nitrites	< 3	Mg/ ltr
Gross alpha radiological activity	**< 0.5**	Bq/ ltr
Gross beta radiological activity	**< 1**	Bq/ ltr

630. D. Lead

Earlier the water used to be supplied in lead pipes which has now been replaced with PVC pipes because of lead poisoning

631. B. Water washed disease

Classification	Mode of Disease	Example
Water borne diseases	Faeco oral route	Typhoid, Cholera, Dysentery, Viral Hepatitis A
Water washed diseases	Inadequate water use/ improper hygiene	Scabies, Trachoma, Conjunctivits
Water based diseases	Aquatic invertebrate animal	Schistosomiasis, Dracunculosis
Water related/ breeding diseases	Insects depending on water	Onchocericasis, Malaria, Filaria, Dengue, Yellow fever

632. C. Frequent washing is not required

Properties	Rapid	Slow
Space	Small	Large
Rate of filtration	200 m.g.a.d.	2 – 3 m.g.a.d.
Effective sand size	0.4 – 0.7 mm	0.2 – 0.3 mm
Preliminary treatment	Coagulation, sedimentation	Plain sedimentation
Washing	Back washing	Scrapping
Frequent washing	Required	Not required
MOA	Physical	Physical & mechanical
Properties	Rapid	Slow
Operation (skill)	+++++	+
Loss of head allowed	8 feet	4 feet
Removal of		
• Turbidity	Good	
• Colour	Good	Fair
• Bacteria	99%	99.99%
Suitability	Cities	Towns
Preliminary storage of raw water	Not required	

633. B. Hypochlorous acid

Active molecule for chlorine induced disinfection:

- **HOCl/ Hypochlorous acid: main role**
- OCL/ Hypochlorite ion: minor role

634. A. Chlorine

Chlorine Has residual germicidal effect (ozone & UV no such property)

635. B. Starch iodide

Indicator solution in Horrock's apparatus is starch iodide

Indicator solution for Presumptive: MPN test is bromocresol purple

636. A. 0.5 mg/ L for a contact period of 1hr

Recommended contact period for free residual chlorine in water: 1 hour

637. B. Chlorine acts best when pH is around 7.0

Explanation for other options:

a. Ortho toluidine test measures combined chlorine separately: ortho toluidine arsenite measures it separately

c. It kills bacteria, viruses and spores: Chlorine doesn't kill it

d. Hypochlorite ions are mainly responsible for disinfecting activity: Hypochlorous acid is mainly responsible for it

638. C. 8 g

Dose of bleaching powder required (chlorine demand):

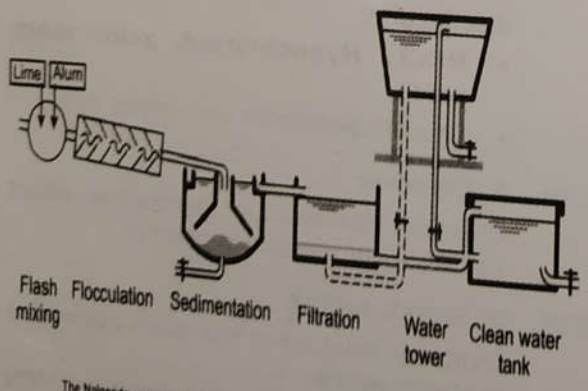
- n * 2 gm to disinfect 455 litres of water (where, n = no. of 1st cup which shows distinct blue colour)
- 4 * 2 = 8 gm for 455 litres of water

639. B. Vital layer

Element responsible for yielding bacteria free water in slow sand filter: vital/ zoological/ schumutzdecke layer

- Present on the sand bed surface of sand filter
- Algae, plankton, diatoms
- Heart of slow sand filter
- Formation is called ripening of filter

640. A. Lime then Alum



The Nalgonda process as installed in the United Republic of Tanzania.

641. A. Eijkman test

Test for bacteriological quality of water:

- Presumptive: MPN test
- Indicator is bromocresol purple
- **True MPN Index: Mc Crady's tables**
- Confirmatory: EIKJMAN TESTS

642. B. Nitrites

Property	Nitrates	Nitrites
Guideline (mg/dL)	< 50	< 3
Contamination	Remote	Recent
Disease	Methemoglobinemia	Blue baby syndrome

643. A. 33% chlorine

- Fresh bleaching powder has 33% chlorine
- 1 chlorine tablet: sufficient to chlorinate 20 ltrs of water

644. A. Solid particles

Solid particles is important for air pollution

645. B. 0.5 mm

Properties	Rapid	Slow
Effective sand size	0.4 – 0.7 mm	0.2 – 0.3 mm

646. C. 90%

When river water is stored for 1st 5- 7 days bacterial count drops by 90% (due to sunlight)

647. C. Chlorination of water

Chlorination for rural and sand filters for urban area

648. D. No residual action

Ozone and UV don't have residual activity

649. D. BOD slightly de- ranged

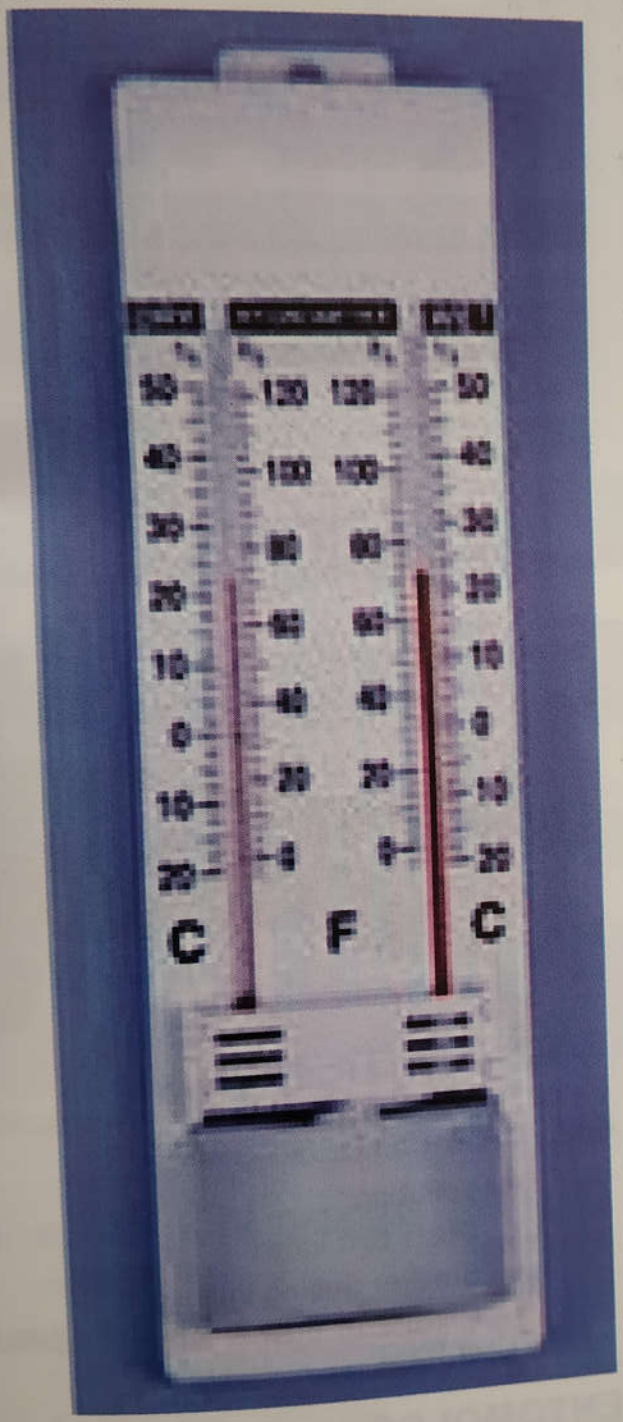
Problem village:

- Drinking water source point more than
- **1.6 km in plains or**
- **100 m in hilly areas**
- Depth > 15 metre

AIR

650. A. Humidity

Assmann/ Whirling psychrometer is used to measure the moisture content of air (humidity)



651. B. Mc Ardle's index

Mc Ardle index is used to see maximum allowable sweat rate

652. C. 4.5 lit/ 4hours

Mc Ardle maximum allowable sweat rate: 4.5 litres/ 4 hours (P4SR)

- < 1: Very comfortable
- 1- 3: Just comfortable
- 3- 4.5: Just tolerable
- > 4.5: Not tolerable

653. C. Air temperature, humidity and air movement

Kata thermometer measures cooling power of air. It includes:

- **T**emperature
- **M**ovement
- **H**umidity

654. A. Kata thermometer

Kata thermometer measures cooling power of air

655. D. Globe thermometer

- Mean radiant temperature = Globe thermometer
- Environmental heat = Wet globe

Instruments used in Air

- **Measurement of solar radiation**
  Campbell-Stoke's sunshine recorder
  Solar radiation thermometer
  Black Globe thermometer
- **Measurement of atmospheric pressure**

Fortin's barometer

Kew-Pattern station barometer

- **Measurement of atmospheric humidity**
  Mason's Hygrometer
  Sling Psychrometer
  Assman Psychrometer
- **Measurement of Air movement**
  Kata Thermometer
  Anemometer
- **Measurement of precipitation**
  Symon's rain gauge

656. A. CO_2 is major greenhouse gas

Explanation for other options:

b. Stratosphere ozone layer is harmful: beneficial

c. CFC increases stratosphere ozone layer: reduces

d. Kyoto protocol called for 20% reduction in greenhouse emissions: 5%

657. A. SO_2

Best Indicators of Air Quality:

- Chemical: SO_2
- Biological: Lichens **(air pollution inversely proportional to lichens)**

658. A. Corrected effective temperature 77- 80 F

Acceptable level for physical comfort: CET of 77- 80 F

659. D. Central Pollution Control Board

CPCB monitors air quality in India using AQI (Air Quality Index). It is colour coded – deep green is best & maroon is worst

660. C. Temperature inversion

Hot air goes up & cold air settles down so the air pollutants are suspended in the lower layers of air so the pollution is maximum in winters

661. B. 40-60

Heat stress index: 40- 60 is not fit for work

662. A. 2-3

Air change: 2- 3 changes/ hour in living room & 4- 6 times in work place

663. D. All of the above

Carbon monoxide is produced in case of incomplete combustion or in places where the levels of oxygen is less

664. C. Kiffer test

Theoretical Question

MISCELLANEOUS

665. A. 20-30 dB

Place/ Tolerable level	Level (dB)
Whisper	20- 30
Normal conversation	60- 70
Pain	140
MC frequency where temporary hearing loss occurs	4000- 6000 Hz
Daily maximum tolerable without substantial damage to hearing	85- 90 dB
Auditory fatigue appears	90 dB (greatest at 4000 Hz)
Sound level above which tympanic membrane rupture (permanent mechanical damage)	150- 160 dB
Hospital wards	20- 35 dB

666. A. 50-100 s ft

Area (feet2)	Person
110	2
90- 100	1.5
70- 90	**1**
50- 70	0.5
< 50	0

667. D. Bed resistance in a low sand filter

668. D. Air pollution

Air pollution:

- Dust: Grit index
- Smoke: Soiling index
- Mixture of dust & smoke: Coefficient of Haze

ENTOMOLOGY

669. D. Kyasanur forest disease

Vector	Disease transmitted
Housefly (Musca domestica)	AGE, Polio, Yaws, Anthrax, Trachoma

Sandfly (Phlebotomus argentipes)	• Leishmaniasis • **Sand** fly fever, Oraya fever
Tse- tse fly (Glossina palpalis)	**Sl**eeping sickness (African trypanosomiasis)
Reduvid bug (Triatominae/ Kissing/ Assassin/ Cone nose bug)	Sleeping sickness (American trypanosomiasis (Chagas Disease)
Black fly (Simulum/ White socks)	Onchocerciasis (River blindness)
Deerfly/ Horsefly (Chrysopes)	Loa loa, Tularemia, Anthrax

Louse/ Lice (fly babies) [wingless insects]	Epidemic typhus, Trench fever, Relapsing fever*, Pediculosis
Mite	Scrub typhus, Rickettsial pox
Itch mite	Scabies
Rat Flea (Xenopsylla)	Bubonic Plaque, Murine (endemic/ flea borne) typhus, Chigerosis * Host for hymelopsis

670. A. Contact poison

Prop.	DDT	Paris Green	Abate/ Temephos	Malathion	Pyrethrum
Source	Artificial				Natural/ Veg
Form	Powder	Green powder	Liquid Granules	Powder	----------
Residual act^{n} (mth.)	18	----------	3	3	0
Use (Anti)	Adult (MC)	Larval (MC)	Larval	Adult (ULV)	Adult (Space sp)
Dose	2 gm/m^2	1 kg/ hectare	1 ppm	2 gm/m^2	0.1%/ 100 ft^3
MOA	• Contact • Neuro	Stomach	--------	Neuro	• Nerve • Contact (Knock down)
Challenge	White marks on wall	----------	----------	Acrid smell	---------

671. B. A-III, B-IV, C- II, D-I

Mosquito Control

- Anti Adult
- ITN's/ LLINs
- IRS: DDT, Malathion
- Space Spraying/ Fogging: Pyrethrum
- Predator mosquito (Toxorhynchitis splendens): biological method for Aedes aegypti
- Anti Larval
- Larvicidal: Oil, Paris green, Temephos
- Fishes: Gambusia, Barbados millions (Lebister), Guppy fish
- Intermittent Irrigation

672. B. Culex

Anopheles	Culex	Aedes/ Tiger	Mansonoides
• Malaria • **Filaria** (outside India)	• **Bancroftian filariasis** • JE • West nile fever • Viral arthritis	• Yellow fever • Dengue • Chikungunya • Rift Valley fever • **Filariasis** (outside India) • ZIKA	• Malayan (**Brugian**) filariasis • Chikungunya • St. Louis Encephalitis
Clean water	Dirty polluted water	Artificial water collection	Water bodies: aquatic plants
5 kms (flight range)	11 kms (flight range)	100 m (flight range)	2- 3 km (flight range)
Broad & short/ no siphon tube	Long & Narrow siphon tube		

Anopheles	Culex	Aedes/ Tiger	Mansonoides
Eggs: • Laid singly • Boat shaped with lateral floats	Eggs: • Laid in clusters/ rafts	Eggs: • Laid singly • Cigar shaped	Eggs: • Laid in clusters (star shaped)
Larvae: • No siphon tube • Rest //el to under surface of water	Larvae: • Siphon • Iar to under surface of water	Larvae: • Siphon tube • Rest in dark, bottom corners	Larvae: • Siphon • Rest attached to rootlets of plants
Painless bite	Burning bite	Painful bite	Painless bite
Exophilic (outside house)	Endophilic (night) Exophilic (day)	Endophilic (inside house)	Exophilic
Anopheles	Culex	Aedes/ Tiger	Mansonoides
Dusk & Dawn biter	Bites at midnight	2 hours before & after sunrise & sunset	Evening time
Sits at an angle	Sits with a hunch back	Sits parallel to the surface	Sits in squatting posture
Sophisticated mosquito	Buzzer/ Nuisance	Fearless/ shameless (bites even in daytime)	Rural

673. B. Malarial parasite parasite in mosquito

Transmission	Definition (always changes in vector body)	Examples
Propagative	Disease agent **only propagates**	• Plaque bacilli in rat fleas • Yellow fever virus in aedes
Cyclo-propagative	Disease agent undergoes **both cyclical & propagates**	Malarial parasite in anopheles
Cyclo-developmental	Disease agent undergoes **only cyclical**	• Filarial parasite in culex • Guinea worm embryo in cyclopes

674. B. Agent merely multiplies in vector but no developmental form change multiplication: cyclo developmental transmission

- Trans stadial:
- Agent transmitted from one stage to other
- Ex: Borrelia burgdorferi (ticks): nymph to adult vector

- Trans ovarial (vertical):
- Female vector passes infectious agent through her eggs to next generation
- Ex: Rickettsia rickettsi in ticks, Dengue

675. B. It is a definitive host in filarial

Disease	Primary	Secondary
Taperworm (T. saginata)	Man	Cattle
Taperworm (T. solium)		Pig
Guinea worm		Cyclopes
Filaria		Culex
Sleeping sickness		Tse tse fly
Malaria	Anopheles	Man
Hydatid cyst	Dog	Sheep, cattle, man

676. B. Housefly

Tse tse fly both sexes bite; Sand fly & mosquitoes only female bite

677. C. Blackfly

Sand fly:

- Breed in cracks & crevices
- Bite of female (requires blood meal every 3- 4 days for ovi position)
- Legs twice as long as body
- Flame shaped/ lanceolate wings
- Fine hairs on margins of wings
- Sanitation measures carried out for a distance of 50 feet
- Flight range: doesn't fly; only hops 50 m
- Very small (smaller than mosquito)
- Painful bite
- Maximum biting potential: ankle area (lower limb)

678. A. Tularemia

Diseases transmitted by Ticks

Hard Tick	Soft Tick
Tick typhus (RMSF)	Relapsing fever
Tularemia	KFD (outside India)
Tick fevers	
Tick paralysis	
Haemorrhagic fevers (KFD in India)	
Viral encephalitis	
Human Babesiosis	

679. A. Environmental control

Environmental cleanliness & hygiene is the most cost effective method as it can control majority of arthropods at one go

680. B. 100 meters

Anopheles	Culex	Aedes/ Tiger	Mansonoides
5 kms (flight range)	11 kms (flight range)	100 m (flight range)	2- 3 km (flight range)

681. B. It is more effective against anopheles

Paris Green
Green powder
Artifical
Anti Larval (MC) (anopheles most effective)
1 kg/ hectare (dose)
Stomach (type of poison)

682. D. Pyrethrum

Pyrethrum is a space spray used for purpose of fogging & acts as an anti adult

683. A. Dieldrin

Organo Phosphorous	Organo Chlorine	Carbamates
Thions:	DDT	Carbaryl
1. Malathion	Dieldrin	Propoxur
2. Fenthion	BHC (HCH)	
3. Parathion		
4. Fenitrothion	Lindane	
5. Dioxathion		
6. Chlorthion		
Diazinon		
Chlorpyrifos		

684. B. Phlebotomus

For phlebotomous earlier DDT was the insecticide of choice

685. A. Use of alkaline soap water

Alkaline soap water is not a deliberate measure

686. A. Ingestion

Method of Transmission of Diseases By vectors:

- Biting: Only females bite except in tse tse flies where both sexes bite & transmit the disease
- Regurgitation
- Scratching/ Rubbing of infective surfaces
- Contamination of host with body fluids of vectors

687. C. Malathion

Malathion: Least toxic OP for man but most toxic for insects

688. C. Immediately kills the prey

Prop.	DDT
Form	Powder
Residual act^{n} (mth.)	18
Use (Anti)	Adult (MC)
Dose	2 gm/m^2
MOA	Contact Neuro
Challenge	White marks on wall

689. D. Filariasis

Filaria is transmitted by all mosquitoes

690. D. 70-80%

% age of active form of DDT = para isomer (70- 80%)

691. B. Larvicide

Mineral oils cover the water surface & cut out the oxygen supply

692. B. Anopheles stephensi

- A. culifacies = rural & peri urban areas
- A. stephensi = urban & industrial & coastal regions

693. B. Cover overhead tanks properly

Anopheles breeds in clean water; so out of the options overhead tank are the only source of clean water

694. A. Dengue fever

Out of the options dengue> JE> Chikungunya> Filaria

695. A. Eliminate breeding places

Houseflies breeds in dirty unhygienic areas

696. B. 150

Insecticide treated nets:

- No. of holes in one square inch is usually 150
- Size of each opening of mosquito net shouldn't exceed 0.0475 inch in diameter

697. A. Anopheles

Anti larval's are most effective against anopheles as it rests parallel to surface area; whereas aedes & culex are perpendicular to surface

698. C. Mansonia

Mansonia breeds in areas where there are a lot of aquatic plants

699. A. Red

Colour	Toxicity	Example
Red	Extremely	Zinc phosphide
Yellow	Highly	Endosulphan
Blue	Moderately	Malathion
Green	Slightly	Mosquito repellents

Biomedical Waste Management – Questions

Note – All answers are as per new biomedical waste guidelines 2019

Category	Example	Discarding Mechanism
Blue	Glassware (broken/ discarded/ contaminated) Metallic body implants	Disinfected (preliminary) Detergent & Sodium hypochlorite/ hydro- claving
White Translucent, puncture/ leak/ tamper proof	Waste sharps	Dry heat sterilization + shredding/ mutilation/ encapsulation Landfill
Red Recyclable disposable items	Tubing, Bottles, Serum containers, Urine bags, Syringes without needles, **Gloves**, Vaccutainers	Autoclave Sterilization + Shredding

YELLOW

	Category	Examples	Disposal
a	Human anatomical	O & G, Surgery, ENT, Optha, FMT, Patho	Incinerate Plasma pyrolysis Deep burial (a & b) Encapsulation (c & d)
b	Animal anatomical	Pharma, Physio, Animal houses, Veterinary hospital	
c	Soiled	Items contaminated with blood, body fluids like gloves, cotton swabs, blood products, blood components	
d	Expired/ discarded med		
e	Chemical	Chemicals used in production of biologicals & used/ discarded products	After treatment discarded in drains
f	Chemical liquid	Silver X ray film, infected secretion, aspirated body fluid, liquid from lab	Pre- treated Mixing with other substances
g	Discarded linen, mattress contaminated with blood/ body fluid		Non chlorinated chemical disinfectant Incinerate/ plasma pyrolysis
h	Biotechnology, Microbiological	Blood bags, Vaccines, culture	Incinerate

700. What is the color coding of bag in hospitals to dispose off human anatomical wastes?

a. Yellow b. Black
c. Red d. Blue

701. "Inertization" deals with:

a. Mixing biomedical waste with cement and other substance before disposal
b. Incineration of biomedical waste with cement
c. Dumping of biomedical waste in sanitary landfills
d. Screw fee technology to disinfect sharps

702. Recyclable waste products disposing in which of the following colour code of the bags:

a. Blue b. Black
c. Red d. Yellow

703. What is the color coding in hospital to dispose of waste sharps?

a. Yellow b. Black
c. Red d. White

704. Incineration is:

a. High temperature reduction process
b. Low temperature reduction process
c. High temperature oxidation process
d. Low temperature oxidation process

705. Which of the following biomedical wastes can be incinerated?

a. Pressurized gas containers
b. Radiographic wastes
c. PVC
d. Human anatomical wastes

706. Which of the following biomedical wastes cannot be disposed of in yellow bags?

a. Reactive chemical wastes
b. Human anatomical wastes
c. Microbiology and biotechnology wastes
d. Dressing soiled with blood

707. Waste disposal of placenta is done by:

a. Disposing it in blue bag
b. Autoclaving
c. Incineration
d. Microwaving

708. Yellow plastic bags containing biomedical wastes are treated by:

a. Autoclaving b. Incineration
c. Microwaving d. Shredding

709. Hospital waste product accounts for all except:

a. Paper 40%
b. Plastic 10%
c. Infectious waste 1.5%
d. Rags 15%

710. Safe disposal of mercury is:

a. Collect carefully and recycle
b. Controlled combustion
c. Treatment with chemicals
d. Deep burial

711. Discarded expired medicines should he disposed in:

a. blue bag b. Black bag
c. Yellow bag d. Red bag

712. Biomedical waste to be discarded in yellow bag except:

a. Human anatomical waste
b. Animal waste
c. Microbiological waste
d. Wasted sharps

713. Incineration is done for:

a. Waste sharps
b. Human anatomical waste
c. Radiographic waste
d. Used batteries

714. Plastic wrapper of syringes disposed in:

a. red bag b. Yellow bag
c. White bag d. Black bag

715. Animal waste is disposed of by:

a. Autoclaving
b. Incineration
c. Chemical treatment
d. Microwaves

716. Disposal mechanism for black colour coded biomedical waste bag is:

a. Incineration b. Dumping
c. Shredding d. Landfill

700. a	701. a	702. c	703. d	704. c	705. d	706. a	707. c	708. b	709. a
710. a	711. c	712. d	713. b	714. d	715. b	716. d			

WASTE DISPOSAL

717. Waste water from kitchen is called:

a. Refuse
b. Garbage
c. Sullage
d. Sewage

718. The amount of sewage flowing in a system in 24 hours is called:

a. Sewage rate
b. Dry weather flow
c. RCA index
d. Sludge

719. Most satisfactory method of refuse disposal is:

a. Dumping
b. Controlled tipping
c. Incineration
d. Manure pits

720. Strength of sewage is expressed in terms of all except:

a. E-coli count
b. Suspended particles
c. Chemical oxygen demand
d. Biological oxygen demand

721. The biological oxygen demand (BOD) indicates:

a. Organic matter
b. Bacterial content
c. Anaerobic bacteria
d. Chemicals

722. Waste water without human excreta is called:

a. Sewage
b. Humus
c. Sullage
d. Effluent

723. The heart of activated sludge process is:

a. Aeration tank
b. Primary sedimentation
c. Digestion tank
d. Secondary sedimentation tank

724. Not a feature of septic tank:

a. Used for personal and small public use
b. Water tight compartment
c. Used where water supply is adequate
d. Used where public sewerage system is adequate

717. c	718. b	719. b	720. d	721. a	722. c	723. a	724. d

Biomedical Waste Management – Explanations

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700. A. Yellow

Refer to guidelines given above

701. A. Mixing biomedical waste with cement and other substance before disposal

Mixing biomedical waste with cement and other substance before disposal. This makes the biohazardous substances less/ even non infectious

702. C. Red

Refer to guidelines given above

703. D. White

Refer to guidelines given above

704. C. High temperature oxidation process

Incineration is high temperature oxidation process

705. D. Human anatomical wastes

Incineration is not done for:

a. Pressurized gas containers

b. Radiographic wastes

c. PVC

706. A. Reactive chemical wastes

Refer to guidelines given above

707. C. Incineration

Placenta is thrown in the yellow bag; contents of which are burnt

708. B. Incineration

Refer to guidelines given above

709. A. Paper 40%

Hospital Waste Composition (major): Black Bag

Waste	Amount
General Waste (sweeping, food waste)	53.5%
Paper	15%
Rags	15%
Plastic	10%
Glass	4%
	97.5%

Waste	Amount
Infectious wastes	1.5%
Metals (sharps)	1%

710. A. Collect carefully and recycle

Mercury can cause heavy metal poisoning so we collect it carefully & recycle

711. C. Yellow bag

Refer to guidelines given above

712. D. Wasted sharps

Refer to guidelines given above

713. B. Human anatomical waste

Refer to guidelines given above

714. D. Black bag

Refer to guidelines given above

715. B. ncineration

Refer to guidelines given above

716. D. Landfill

Refer to guidelines given above

717. C. Sullage

	Refuse	Sewage/ Black water		Sullage/ Grey water
Waste type	Solid	Liquid + Excreta		Liquid
Disposal	Sanitary Landfill/ Controlled tipping (most satisfactory method)	Home Septic Tank	Community Sewer tanks	Drains
		Both aerobic & anaerobic digestion		

718. B. Dry weather flow

Dry weather flow: Average amount of sewage that is measured for 24 hours period

719. B. Controlled tipping

Controlled tipping is the most efficient method

720. D. Biological oxygen demand

The most important test carried out on sewage. Sewage with a BOD value of: – 300 mg/l (300 ppm) or above is termed as **strong** – 100 mg/l (100 ppm) or below is termed as weak

721. A. Organic matter

Biochemical oxygen demand, or **BOD**, measures the amount of oxygen consumed by microorganisms in decomposing organic matter in stream water. **BOD** also measures the chemical oxidation of inorganic matter (i.e., the extraction of oxygen from water via chemical reaction)

722. C. Sullage

Refer to explanation number of 18

723. A. Aeration tank

Sludge is managed aerobically which is done in the aeration tank

724. D. Used where public sewerage system is adequate

Septic Tank

- Ideal Retention Period in Septic Tank is 24 hours
- MOA: water tight compartment (serves as example of sanitation barrier)
- Used for personal & small public use, when water supply is adequate
- Aerobic oxidation outside septic tank & anaerobic oxidation outside

Disaster Management – Questions

725. Post disaster earthquake, which of the following vaccines is recommended by WHO?

a. Typhoid
b. Cholera
c. Tetanus
d. Measles

726. In draughts commonly noticed vitamin deficiency is:

a. Vitamin A
b. Vitamin B
c. Vitamin C
d. Vitamin D

727. Arrange the following phases of disaster cycle in a logical sequence:

a. Disaster Impact - Mitigation - Rehabilitation - Response
b. Disease Impact - Response - Rehabilitation - Mitigation
c. Rehabilitation - Response Disease Impact - Mitigation
d. Response - Disaster Impact - Rehabilitation- Mitigation

728. During a disaster, rapidly classifying the injured on the basis of likelihood of their survival with prompt medical intervention, is a part of:

a. Search, rescue and first aid
b. Triage
c. Tagging
d. Disaster mitigation

729. Most commonly reported disease in the post disaster period is:

a. ARI
b. Gastroenteritis
c. Tetanus
d. Malaria

730. Which of the following is the nodal center for disaster management?

a. PHC
b. CHC
c. Police control room
d. District

731. Natural disaster causing maximum death and damage:

a. Hydrological
b. Meteorological
c. Geological
d. Fires

732. During massive disaster what should be done first:

a. Search and rescue, first aid
b. Triage
c. Stabilization of victims
d. Hospital treatment & redistribution of patient

733. Drug to be consumed prophylactically post nuclear disaster:

a. Potassium iodide
b. Vitamin C
c. Vitamin E
d. Anti-oxidant tablet

734. Amount of residual chlorine in drinking water post disaster is:

a. 0.5 ppm
b. 0.7 ppm
c. 1.0 ppm
d. 5 ppm

725. d	726. a	727. b	728. b	729. b	730. d	731. a	732. a	733. a	734. b

Disaster Management – Explanations

725. D. Measles

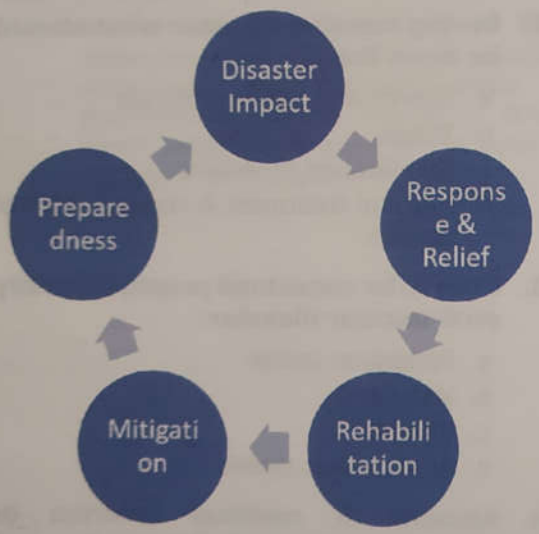
Vaccines: Measles> Rota> Typhoid & Cholera (no role)

726. A. Vitamin A

Diarrhoea is common in disasters & Vitamin A whose storage is almost 6 months in human body is the first vaccine whose deficiency is seen

727. B. Disease Impact - Response - Rehabilitation - Mitigation

Stages of Disaster Cycle



728. B. Triage

S.	Colour	Priority	Management
1	Red	Highest	Immediate (within 6 hours)
2	Yellow		Within 24 hours
3	Green		Ambulatory patients
4	Black	Lowest	Dead

729. B. Gastroenteritis

Most common disease after a disaster is acute gastro enteritis

730. D. District

District is the nodal unit for conduct of disaster management

731. A. Hydrological

Maximum morbidity and mortality is seen in hydrological disasters

731. A. Search and rescue, first aid

Out of the options A is the 1st response to be done

733. A. Potassium iodide

In humans, the thyroid gland is prone to absorbing radioactive iodine. But when Potassium Iodide (KI) is taken orally, it saturates the thyroid with non-radioactive iodine, reducing the amount of radiation the thyroid will take in

734. B. 0.7 ppm

Water	Amount of residual chlorine (ppm)
Normal Drinking water	0.5
Post disaster Drinking Water	0.7
Swimming pool	1.0
To kill cyclopes	5.0

Occupational Health – Questions

735. Following occupational disease are notifiable under the Indian Factory Act except:

a. Silicosis
b. Asbestosis
c. Byssinosis
d. Bagassosis

736. Ideal periodical examination of workers in an industry is done every

a. Day
b. Month
c. Year
d. Depends on type of exposure

737. Indian constitution has declared that children less than _____ years should not be employed in factories or mines:

a. 10
b. 12
c. 14
d. 16

738. 'Safety officers' have to be appointed in factories where number of workers is more than:

a. 500
b. 1000
c. 2000
d. 5000

739. Inhalation of sugarcane dust could cause:

a. Bagassosis
b. Byssinosis
c. Tobacosis
d. Farmer's lung

740. The minimum air space per worker prescribed by Indian factory Act is:

a. 200 cu ft
b. 300 cu ft
c. 500 cu ft
d. 700 cu ft

741. "White fingers" may result from which of the following?

a. Heat
b. Cold
c. UV radiation
d. Vibration

742. Nearly 3/4th of occupational cancers are:

a. Skin cancer
b. Lung cancer
c. Cancer bladder
d. Leukaemia's

743. Pre- placement examination has an important role to play in:

a. Energy conservation
b. Occupational health
c. Genetic counselling
d. Mental health

744. Under ESI act sickness benefit is given for a period of:

a. 17 days
b. 39 days
c. 91 days
d. 117 days

735. d	736. d	737. c	738. b	739. a	740. c	741. d	742. a	743. b	744. c

Occupational Health – Explanations

735. D. Bagassosis

29 diseases are notifiable under the Indian Factories Act, all occupational cancers & almost all occupational diseases (except bagassosis)

736. D. Depends on type of exposure

Frequency and content depend upon the type of occupational exposure:

- Annual: Majority
- Monthly: Lead, Radium and dyes
- Daily: dichromates exposure

737. C. 14

Age:

- Prohibited for age < 14 years
- 15 to 18 years old adolescents to be declared fit by doctor & will work only between 6 am to 7 pm

738. B. 1000

- 1 safety officer/ 1000 workers
- 1 welfare officer/ 500 workers

739. A. Bagassosis

Diseases	Exposure source
Silicosis	Silica dust
Anthracosis	Coal dust
Asbestosis	Asbestos dust
Berylliosis	Beryllium
Siderosis	Iron dust
Stannosis	Tin dust
Bagassosis	Sugarcane Molasses (Thermoactinomyces sacchari)
Farmer's lung	Mouldy hay (Micropolyspora faeni)
Bird fancier's lung	Avian/ bird droppings
Compost lung	Compost (Aspergillus)
Byssinosis	Cotton fibre

740. C. 500 cu ft

Minimum: 500 ft^3/ worker

741. D. Vibration

Physical	Hazard
Light	**Miner's nystagmus**
Vibration	**White fingers**

742. A. Skin cancer

Skin cancer is the most common occupational cancer followed by lung cancer

743. B. Occupational health

Pre- placement examination

- Ergonomics: right man in the right job
- **Occupational dermatitis: MC disease to be ruled out**

744. C. 91 days

ESI:

- Covers all factories excluding mines, defence, railways
- Covers shops, hotels and restaurants, cinemas and theatres, road-motor transport and newspaper establishments, **educational institutions (both private & govt)**
- Covers all employees getting 21,000/- per month
- Union Minister of Labour
- Finance:
- Employer: 4.75% of total wage
- Employee: 1.75% of total wage
- State & Central Government share expenditure in ratio of 1:7

Benefit	Facility
Medical	Full medical care
Sickness	70% of daily wage is payable for 91 days
Extended sickness	80% of daily wage payable for 2 years (730 days) for a set of 34 diseases
Enhanced sickness	Full daily wage up to 7 days for vasectomy and up to 14 days for tubectomy
Maternity	Full daily wages up to 26 weeks for confinement up to 6 weeks for miscarriage or MTP up to 4 weeks for sickness arising out of pregnancy, confinement, premature birth
Benefit	Facility
Temporary disablement	90% of daily wage till recovery
Permanent disablement	90% of daily wage
Dependant	Pension at 90% of wages
Funeral expenses	Cash amounting to 10000/-
Rehabilitation	

Biostatistics – Questions

745. Histogram is used to describe:

a. Quantitative data of a group of patients
b. Qualitative data of a group of patients
c. Data collected on normal scale
d. Data collected of ordinal scale

746. Which of the following variables is measured on the ordinal scale:

a. Type of anemia
b. Severity of anemia
c. Hemoglobin level
d. Serum ferritin level

747. Measurement of blood pressure is which type of data:

a. Nominal b. Ordinal
c. Interval d. Continuous

748. Histogram is used to present which kind of the data:

a. Nominal b. Continuous
c. Discrete d. Any of above

749. All of the following are quantitative variables except:

a. Serum cholesterol
b. Weight
c. Gender
d. Celsius temperature scale

750. Which of the following method can show relationship between two quantitative variables?

a. Histogram b. Line diagram
c. Bar chart d. Scatter plot

751. A physician, after examining a group of patients of a certain disease classifies the condition of each one as normal mild moderate or severe. Which one of the following is the scale of measurement that is being adopted for classification of the disease condition:

a. Normal b. Interval
c. Ratio d. Ordinal

752. Mean and standard deviation can be worked out only if data is on:

a. Interval/ Ratio scale
b. Dichotomous scale
c. Nominal scale
d. Ordinal scale

753. Blood groups will be an example for:

a. Interval scale data
b. Ordinal scale data
c. Categorical data
d. Nominal data

754. An investigator into the life expectancy of IV drug abusers divides as sample of patients into HIV - positive and HIV negative groups . What type of data does this division constitute:

a. Nominal b. Ordinal
c. Interval d. Ratio

755. The response which is graded by an observer on an agree or disagree continuum is based on:

a. Visual analog scale
b. Guttman scale
c. Likert scale
d. Adjectival scale

756. Trends can be best represented by

a. Scatter b. Bar
c. Line d. Pie

757. All of the following are example of nominal sale except:

a. Race
b. Sex
c. Body weight
d. Socio economic status

758. Graph to correlate two quantitative data is:

a. Histogram
b. Scatter diagram
c. Line diagram
d. Frequency curve

745. a	746. a	747. d	748. b	749. c	750. d	751. d	752. a	753. d	754. a
755. c	756. c	757. c	758. b						

759. Likert scale is :

a. Ordinal scale
b. Nominal scale
c. Variance scale
d. Categorical Scale

760. Nominal data example is

a. Types of hospital
b. Severity of pain
c. Height
d. Grades of obesity

761. A doctor is taking history from arthritis patient and decides to make a chart to assess joint involvement. Which chart should he make?

a. Pie
b. Venn
c. Histogram
d. Tree

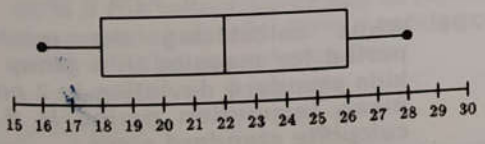
762. Identify the statistical diagram shown in the photograph

a. Funnel plot
b. Forest plot
c. Stem & leaf plot
d. Box & Whisker Plot

0	
1	
2	0 6 8 8 8
3	0 2 6 6 7 8
4	1 2 6 6
5	
6	

763. Identify the statistical diagram shown in photograph:

a. Funnel plot
b. Forest plot
c. Stem & leaf plot
d. Box & Whisker Plot



764. Out of 11 birth in a hospital , 5 babies weighed over 2.5 kg and 5 weighed less than 2.5 kg. What value do 2.5 represent:

a. Geometric average
b. Arithmetic average
c. Median
d. Mode

765. The number of malaria case reported during the last 10 years in a town is given below 250, 350, 1000, 320, 300, 310, 290, 330, 280 and 260 the epidemiological wants to find out the average number of malaria cases reported in that town during the last 10 years. The most appropriate measure of average for the data will be:

a. Arithmetic mean
b. Mode
c. Median
d. Geometric mean

766. In a bimodal series if mean is 2 and median is 3, what is the mode :

a. 5
b. 2.5
c. 4
d. 3

767. Mean value of weight of a group 10 boys was found to be 18.2 kg. Later it was found that weight if one of the boy was wrongly recorded as 2.0 kg that should have been 20 kg. the true mean weight of the group is:

a. 18.2 kg
b. 20.2 kg
c. 16.4 kg
d. 20 kg

768. IF 60 values are arranged in ascending order middle value is :

a. Arithmetic mean
b. Median
b. 30 th percentile
d. 31 st percentile

769. Median is important for all except:

a. Blood pressure
b. Survival time
c. Incubation period
d. Health expenses

770. A smoker states that he has been smoking for 6 year in the first year he was taking up to 5 sticks per day only in the next 3 years he increased it to half pack per. Day in the 5 th year he stated that his daily sticks consumption is 2 pack per day. Select the correctstatement mean median and mode of number of sticks are :

a. 16,10,15
b. 16,10,10
c. 10,10,15
d. 16,10,15

759. a	760. a	761. d	762. c	763. d	764. c	765. c	766. a	767. d	768. b
769. a	770. b							

771. In a survey of sleep apnea scores among 10 persons, the highest value obtained of 58 was wrongly recorded as 85. This will affect the final results as:

a. No change in mean, Increased median
b. Increased mean, no change in median
c. Increased mean, increased median
d. Increased mean, decreased median

772. Median of the following data's will be 10,9,8,8,7

a. 8.75 b. 8
c. 9 d. 10

773. Most frequently occurring value in a group of data:

a. Mean b. Mode
c. Median d. Standard deviation

774. What is true among given data 20,31,31,31,25,28,35,38,31:

a. Mean is 31 b. Range is 20-38
c. Median is 15 d. Mode is 15

775. Commonly used measure of central tendency are all of the following except :

a. Mean b. Median
c. Mode d. Chi-square test

776. 'Centile divides data into:

a. 100 equal parts
b. 4 equal parts
c. 10 equal parts
d. 20 equal parts

777. 50 th percentile is equivalent to :

a. Mean b. Median
c. Mode d. Range

778. Bacterium can divide every 20 minutes. Beginning with a single individual how many bacteria will be there in the population if there is exponential growth for 3 hours :

a. 18 b. 440
c. 512 d. 1024

779. For a group of n=250 subjects , 40 th percentile would be the following value (after arranging in ascending order).

a. 7 th b. 40 th
c. 100 th d. 140 th

780. Central value of a set of 180 values can be obtained by :

a. 90 th percentile
b. 2 nd tertile
c. 9 th decile
d. 2 nd quartile

781. A measure of location that divides the distribution in the ratio of 3:1 is :

a. Median b. First quartile
c. Third quartile d. Mode

782. BP data of 200 persons were collected. The first quartile BP of data was 94 mm Hg & 3 rd quartile was 110 mm Hg. How many patients lie between 3 rd & 4 th quartile.

a. 25 b. 50
c. 100 d. 200

783. A physician recorded diastolic BP in 125 women aged 18- 60 years & found the mean to be 70 mm Hg with SD of 10 mm Hg, what will be the 5 th percentile value?

a. 40 b. 53.6
c. 67.5 d. 89.4

784. Standard deviation is the measure of:

a. Chance
b. Central tendency
c. Deviation from mean value
d. None

785. Median weight of 100 children was 12 kgs. The standard deviation was 3. Calculate the percent coefficient of variance :

a. 25% b. 35%
c. 45% d. 55%

786. While calculating the incubation period for measles in a group of 25 kids standard deviation is 2 and the mean incubation period is 8 days calculate standard error :

a. 0.4 b. 1.0
c. 2.0 d. 0.5

787. Standard deviation of mean measures:

a. Non sampling errors
b. Sampling errors
c. Random errors
d. Conceptual errors

771. b	772. b	773. b	774. b	775. d	776. a	777. b	778. c	779. c	780. d
781. c	782. b	783. b	784. c	785. a	786. a	787. b			

788. If the birth weight of each of the 10 babies born in a hospital in a day is found to be 2.8 kg, then the standard deviation of this sample will be :

a. 2.8 b. 0
c. 1 d. 0.28

789. If each value of a given group of observation is multiplied by 10, the standard deviation of the resulting observation is :

a. Original std. Deviation x 10
b. Original std. Deviation / 10
c. Original std. Deviation -10
d. Original std. Deviation it self

790. The Hb level in health women has mean 13.5 g/dl and standard deviation 1.5g/dl, what is the Z score for a woman with Hb level 15.0 g/dl:

a. 9.0 b. 10.0
c. 2.0 d. 1.0

791. Person or spearman coefficient is used for evaluation of :

a. Difference in proportion
b. Comparison of more than 2 mean
c. Comparison of variance
d. Correlation

792. Most common deviation used in social medicine is :

a. Mean
b. Range
c. Variance
d. Standard deviation

793. In a population of 100 prevalence of candida glabrata was found to be 80% if the investigator has to repeat the prevalence with 95% confidence what will the prevalence be :

a. 78-82% b. 76-84%
c. 72-88% d. 74-86%

794. How much population falls between median and median plus one standard deviation in a normal distribution :

a. 0.34 b. 3.68
c. 0.17 d. 0.47

795. There is a population of 20000 people with mean hemoglobin being 13.5 gm % having a normal distribution. What proportion of population constitutes proportion more than 13.5 gm %:

a. 0.25 b. 0.50
c. 1 d. 0.34

796. Measuring variation between two different units is done through:

a. Variance
b. Coefficient of variation
c. Standard deviation
d. Range

797. True about standard deviation is/ are all except:

a. 1 SD covers 95% values
b. Indicated distribution of variables
c. Most common method used for dispersion
d. Better indicator of variance than range

798. Mean is 230 & SE=10 , then 95% confidence limit is :

a. 210-250 b. 250-290
c. 290-330 d. 330-370

799. Measures of dispersion all except:

a. Range
b. Mean of average deviation
c. Standard deviation
d. Correlation and regression

800. Confidence limit is calculated by using :

a. Mean and standard error
b. Mean and standard deviation
c. Median and standard deviation
d. Median

801. Z score cirtieria applicable to :

a. Normal distribution
b. Skewed deviation
c. Chi- square test
d. Paired t test

802. Correct relation between S = Standard deviation & V = variance is:

a. V=Square root of S
b. S= Square root of V
c. V= 2S
d. S= 2V

788. b	789. a	790. d	791. d	792. d	793. c	794. a	795. b	796. b	797. a
798. a	799. d	800. a	801. a	802. b					

803. A researcher draws unbiased sample of 100 adult Delhites and finds that their meanweight is 72 kg with a standard deviation of 15, 95% CI for of wt of Delhites shall be:

a. 66 And 78 kg
b. 69 and 75 kg
c. 70.5 and 73.5 kg
d. None of the above

804. Square root of deviation is Called:

a. Standard deviation
b. Standard error
c. Mean deviation
d. Range

805. Standard error of mean is called as:

a. Standard deviation
b. Mode
c. Median
d. Variable

806. Which is the best distribution to study the daily admissionof head injury patients in a trauma care center :

a. Normal distribution
b. Binomial distribution
c. Uniform poison distribution
d. Poisson distribution

807. The standard normal distribution:

a. Is skewed to the left
b. Has mean =1.0
c. Has standard deviation = 0.0
d. Has variance = 1.0

808. A normal distribution curve depends on:

a. Mean and sample size
b. Range and sample size
c. Mean and standard deviation
d. Mean and Median

809. The fasting blood levels of glucose for a group of diabetics is found to be normally distributed with a mean of 105 mg per 100 ml of blood and a standard deviation of 10 mg per 100 ml of blood . From this data is can be inferredthat approximately 95% of diabetic will have inferred that approximately 95% of diabetic will have their fasting blood level within the limit of :

a. 75 and 135 mgs
b. 85 and 125 mgs
c. 95 and 115 mgs
d. 65 and 145 mgs

810. In a group of 100 children the mean weight of children n is 15 kg . The standard deviation is 1.5kg . Which one of the following is true :

a. 95% of all children weight between 12 and 18 kg
b. 95% of all children weight between 13.5 and 16.5 kg
c. 99% of all children weight between 12 and 18 kg
d. 99% of all children weight between 13.5 and 16.5 kg

811. For a negatively skewed data mean will be :

a. Less than median
b. More than median
c. Equal to median

812. The distribution of random blood glucose measurements from 50 first year medical students was found to have a mean of 3.0 mmol/ litre with a standard deviation of 3.0 mmol/ litre. Which of the following is a correct statement about the shape of the distribution of random blood glucose in these first year medical student :

a. Since both mean and standard deviation are equal it should be a symmetric distribution
b. The distribution is likely to be positively skewed
c. The distribution is likely to be negatively skewed
d. Nothing can be said conclusively

813. A chest physician observed that the distribution of forced expiratory volume (FEV) in300 smokers had a median valueof 2.5 litres with the first and third quartiles being 1.5 and 4.5 litre respectively . Based on this data how many persons in the sample are expected have a FEV between 1.5 and 4.5 litres:

a. 7.5 b. 150
c. 225 d. 300

803. b	804. a	805. a	806. d	807. d	808. c	809. b	810. a	811. a	812. d
813. b									

814. How much of the sample is included in 1.95 SD:

a. 99% b. 95%
c. 68% d. 65%

815. If the systolic blood pressure in a population has a mean of 130 mmHg and a median of 140 mm Hg. the distribution is said to be :

a. Symmetrical
b. Positively skewed
c. Negatively skewed
d. Either positively or negatively skewed depending on the Standard deviation

816. A Population study showed a mean glucose of 86 mg/ dL. In a sample of 100 showing normalcurve distribution . What percentage of peoplehave glucose above 86mg/ dL:

a. 34 b. 50
c. NIL d. 68

817. Pearson's skewness coefficient is given by :

a. Mean - mode / SD
b. Mode -mean / SD
c. SD/ Mean - Median
d. SD/ Median-Mean

818. Q-test is used for detecting :

a. Outliers
b. Interquartile range
c. Difference of mean
d. Difference of proportions

819. Mean hemoglobin of a group of pregnant females is found to be 10.6 gm/ dL with Standard deviation of 2 gm/dL . 5% pregnant females in this group will have their hemoglobin level below :

a. 8.6 gm/ dL b. 7.31 gm/ dL
c. 6.6 gm/dL d. 5.0 gm / dL

820. In a standard normal curve the area between one standard deviation on either side will be :

a. 68% b. 85%
c. 99.7% d. None of the above

821. About standard normal curve all is true except :

a. Area = 1 b. S.D. = 1
c. Bell shaped d. Mean and median=1

822. Normal distribution curve is determined by :

a. Standard deviation and mean
b. Standard deviation and mode
c. Mode and median
d. Standard deviation and median

823. For calculating of sample size for a prevalence study all of the following are necessary except :

a. Prevalence of disease in population
b. Power of the study
c. Significance level
d. Absolute precision

824. In the WHO recommended EPI cluster sampling for assessingprimary immunization coverage , the age groupof children to be surveyed is :

a. 0-12 months b. 6-12 months
c. 9-12 months d. 13-24 months

825. Following are the sampling techniques used to conduct community health surveys , except :

a. Simple random
b. Systemic random
c. Stratifiedrandom
d. Cluster testing

826. The number of patients required in a clinical trial to treat a specifydisease increases as :

a. The incidence of the disease decreases
b. The significance level increases
c. The size of the expected treatment effect increased
d. The drop out rate increases

827. In a study people are separated into certain sub groups meaningfully and then some are selected randomly from each of these sub groups . what type of sampling is being done :

a. Simple random sampling
b. Cluster random sampling
c. Systematic random sampling
d. Stratified rand sampling

814. b	815. c	816. b	817. a	818. a	819. b	820. a	821. d	822. a	823. b
824. d	825. d	826. d	827. d						

828. True about cluster sampling all except :
a. Sample size same as simple random
b. It is two stage sampling
c. Cheaper than other methods
d. It is a method for rapid assessment

829. For which of the following sampling , a design effect is used :
a. Simple random sampling
b. Systematic random sampling
c. Stratified random sampling
d. Cluster random sampling

830. 50% population having disease with prevalence to be 45-55% with 95% of probability of identifying them minimum sample size required is :
a. 100 b. 200
c. 300 d. 400

831. Simple random sampling is ideal for :
a. Vaccinated people
b. Heterogeneous population
c. Homogenous population
d. All of the above

832. Stratified sampling is ideal for :
a. Heterogeneous data
b. Homogenous data
c. Both
d. None

833. Children surveyed is cluster sampling for coverage of national immunization program in :
a. 30 cluster of 5 children
b. 20 cluster of 5 children
c. 30 cluster of 10 children
d. 30 cluster of 7 children

834. In a study first schools are sampled then section sand finally student . This type of sampling is known as :
a. Stratified sampling
b. Simple random sampling
c. Cluster sampling
d. Multistage sampling

835. When number of observation is 25, the number of class intervals must be :
a. 25 b. 15
c. 10 d. 5

836. All of the following comes under random sampling method except :
a. Quota sampling
b. Simple random sampling
c. Stratified sampling
d. Cluster sampling

837. For an epidemiological study every 10th person is selected from a population . This type of sampling is known as :
a. Simple random sampling
b. Stratified random sampling
c. Systematic random sampling
d. Cluster random sampling

838. Simple random sampling :
a. Provides least number of possible samples
b. Equal chance to each for collection of certain number for a sample
c. Picking every 5th or 10th at regular interval
d. Sampling represent a corresponding strata of universe

839. If prevalence of diabetes is 10% the probability that three people selected at random from the population will have diabetes is :
a. 0.01 b. 0.03
c. 0.001 d. 0.003

840. Chance of passing Genetic disease " Y" trait by the affected parents to children is 0.16 . They plan to have two children. Probabilityofboth the children having "Y" trait is :
a. Zero b. 0.16
c. 0.32 d. 0.0256

841. For Mrs Rekha probability of having a baby of B< W 2500 gms is 0.50 and having a BW 255 - 29999 gms is 0.20. So the probability for Mrs . Rekha to have a baby of BW < 3 kg is:
a. 0.30 b. 0.70
c. 0.10 d. 1.0

842. Probability of Mr. Ram developing acute MI in his lifetimeis 0.75 what are his odds of developing acute MI in his lifetime :
a. 3:4 b. 3:1
c. 4:3 d. 1:3

828. a	829. d	830. d	831. c	832. a	833. d	834. d	835. d	836. a	837. c
838. b	839. c	840. d	841. b	842. b					

843. The events A and B are mutually exclusive , so :

a. Prob (A or B) = Prob (A) + Prob (B)
b. Prob (A and B) = Prob (A) X Prob (B)
c. Prob A = Prob B
d. Prob A + Prob B = 1

844. There were 50 patients in a ward20 girls and 30 boys of them 10 girls and 20 boys required surgery . What is the probability of each patient being selectedcorrectlyfor surgery :

a. 2/6 b. 3/5
c. 6/25 d. 1/6

845. What is the probability that confounding factor fall to the right of 95% :

a. 1 in 5 b. 1 in 10
c. 1 in 15 d. 1 in 20

846. In a study variation in cholesterol was seen before and after givien a drug . Test which would give its significance is :

a. Unpaired t test
b. Fischer test
c. Paired t test
d. Chi square test

847. Square root of p1 Q1/ N1 + P2Q2/ N2 is a measure of :

a. Mean
b. Standard error of difference between two mean
c. Standard error of difference between two proportion
d. Normal deviate

848. A chi square test wound be most appropriate for testing which one of the following hypotheses :

a. That the mean AIPGE score of Delhi students is greater than that ofMumbai students
b. That asmaller proportion of people who were immunizedagainst chickenpox subsequentlydevelop zoster than those who were not immunized
c. That the mean blood pressure of black and white male - hypertensivepatient taking ACE inhibitoris the same as the of black and white female hypertensivepatient taking ACE inhibitors and that of black and white males and females taking diureticsand placebos
d. That the mean cost of treating a patient with coronary artery disease with angioplasty in greater than the mean cost of providing medical treatment

849. In a particular trial the association of lung cancer with smoking is found to be 40% in one sample and 60% in another . What is the best test to compare the result:

a. Chi square test
b. Fischer Test
c. Paired t test
d. ANOVA Test

850. Height of group of 20 boysaged 10 years was 140 + 13 cm & 20 girl of same age was135 cm + 7 cm to test the statisticalsignificance of difference in height test applicable is:

a. X^2 b. Z
c. T d. F

851. The mean B.P of a group personwas determine and after an interventionaltrial the mean BP was estimated again . The best to be applied to determine the significance of intervention is :

a. Chi - square
b. Paired t test
c. Correlation coefficient
d. t- test

852. An investigator wants to study the association between maternal intake of iron supplements (yes or No)and incidence of low birth weight (<2500 or > 2500) gms). He collects relevant data from 100 pregnant women as to the status of usage of iron supplementand the statusof low birth weightin their newborns. The appropriate statistical test of hypothesis advised in this situation is :

a. Paired - t-test
b. Unpaired or independent t- test
c. Analysis of variance
d. Chi- Square test

843. a	844. b	845. d	846. c	847. c	848. b	849. a	850. c	851. b	852. d

853. While applying Chi square test to a contingencytable of 4 rows and 4 columns the degrees of freedom would be :

a. 1 b. 4
c. 9 d. 8

854. A cardiologist wants to study the effect of an antihypertensive drug. HE notes down the initial systolic blood pressure (mmHg) of 50 patients and then administers the drugs on them. After a week's treatment he measure the following is the most appropriate statistical test of significance to test the statistical significance of the changes in blood pressure :

a. Paired t- test
b. Unpaired or independent t- test
c. Analysis of variance
d. Chi-square test

855. A study was undertaken to assess the effect of a drug in lowering serum cholesterol level . 15 obese women and 10 non obese women formed the 2 limbs of the study. Which test would be useful to correlate the results obtained:

a. ANOVA test
b. Student's test
c. Chi square test
d. Fischer test

856. Not required for Chi square test is :

a. Mean & SD of the groups
b. Median & SD of the groups
c. small sample
d. contingency table (2*2 TABLE)

857. Appropriate statistical method to compare two mean is :

a. Chi square test
b. Student's t test
c. Odds ratio
d. Correlation coefficient

858. Mean, median and mode are :

a. Measure of dispersion
b. Measure association between two variables
c. Test of significance
d. Measures of central tendency

859. In a given data , degree of freedom will be :

Duration of Developing AIDS	Blood Group			
	A	B	AB	O
0-5 years	20	30	48	7
5-10 years	110	12	37	12
10-15 years	12	9	8	3

a. 12 b. 6
c. 9 d. 20

860. For testing the statistical significance of the difference in heights of school children:

a. Student's t' test
b. Chi- squared test
c. Paired t test
d. One way analysis of variance (one way ANOVA)

861. Not true about Chi square test is:

a. Tests the significance of difference between two proportions
b. Tells about presence or absenceof an association between two variables
c. Directly measures the strength of association
d. Can be used when more than two groups are to be compared

862. You have been asked to design a study for a disease whose prevalence in the community is 10%. The alpha error has to be kept at 5% with a relative precision of 20% and a power of 20%. What will be the accurate sample size for this study :

a. 900 b. 3600
c. 400 d. 1800

863. In a study 2 groups of new born are checked for their weights based on whether mothers received food supplements or not. Appropriate statistical test is:

a. Pairedtest
b. Unpaired t test
c. Fischer exact test
d. Chi square test

853. c	854. a	855. b	856. a	857. b	858. d	859. b	860. d	861. c	862. a
863. d									

864. Chi square test is used to measure the degree of :

a. Significance of difference between two proportions
b. Causation between two variables
c. Correlation between to variable
d. Agreement between to observation

865. All of the these are continuous variable except :

a. Height in CMS
b. Weight in KGS
c. Blood Groups A,B,ABO
d. Age in years and months

866. 1 degree of freedom between two qualitative variables done by chi square is :

a. 0.45 b. 2.41
c. 3.84 d. 4.34

867. Which of the following is used for selecting patient with respect to potential factors that will affect the results :

a. Systematic random sampling
b. Simple random sample
c. Stratified random sampling
d. Cluster sampling

868. About chi square test true is :

a. < 0.001 is statistically significant
b. Less no . of samples are associated with less error
c. Categories of data used in test need not be mutually exclusive and discrete
d. Tests correlation and regression

869. A study who planned to find out the effect of iron supplementation during pregnancy on the birthweight of new bornchildren . Two group one with iron supplementation and the other without iron supplementation and the other without ironsupplementation during pregnancy were compared. Birth weight of new borne were recorded as means + SD. Which significanttest (Statistical) is appropriate for comparison of birthweights between he two groups:

a. Unpaired t test
b. Paired t test
c. Mc Nemar
d. Chi- square test

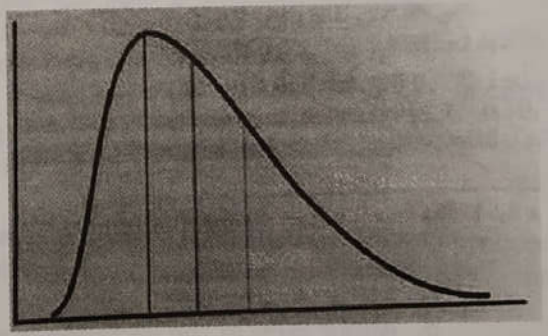
870. ANOVA is used :

a. To Compare means in 2 groups
b. To compare means in 3 or more groups
c. To compare mean in 1 group before and after intervention
d. To find correlation

871. Apgar scores of 30 children are recorded in a hospital and most of the reading are found to be 7 or above . what can you out about this data distribution :

a. Positively skewed
b. Negatively skewed
c. Normal distribution
d. Symmetrically skewed data

872. In a centre the number of nodes dissected during 20 modified radical mastectomy were plottedin the form of a cure and there arethree marking on the below curve. Based on the distribution type of curve which of the following is correct



a. Mean > median > mode
b. Mode > mean > median
c. Median > mode > mean
d. Mode > mean > median

873. Test is used to compare Kaplan Meier survival curve :

a. ANOVA
b. Bland Altmann analysis
c. Chi square test
d. Cox proportional hazards test

864. a	865. d	866. c	867. c	868. a	869. a	870. b	871. b	872. a	873. d

874. A lecturer states that the correlation coefficient between prefrontal blood flow under cognitive load and the severity of psychotic symptoms in schizophrenic patientsis - 1.24 you can therefore conclude that :

a. Pre frontal blood flow under cognitiveload is a good predictor of the severity of psychotic symptoms in schizophrenic patients
b. Prefrontal blood flow under cognitive load accounts for a large proportion of the variance in psychotic symptoms in schizophrenic patients
c. Psychosis or schizophrenia is in some way a cause or partial cause of low prefrontal blood flow under cognitive load
d. The lecturer has reportedthe correlation coefficient incorrectly :

875. A cardiologist found a highly significant correlation coefficient (r=0.90, p = 0.01) between the systolic blood patient attending his clinic which of the following statement is a wronginterpretation of the correlation coefficientobserved :

a. Since there is a high correlationthe magnitudes of boththe measurements are likely to be close to each other
b. A patient with a high level of systolic BP is also likelyto have a high levelof serum cholesterol
c. A patientwith a lowlevel of systolicBP is also likely to have a low level of serum cholesterol
d. About 80% of the variation in systolic blood pressure among his patients can be explained by theirserum values and vice a versa :

876. Which of the following is not true about correlation :

a. It indicates degree of association between two characteristics
b. Correlation coefficient of 1 meansthat the two variables exhibitlinearrelationship
c. Correlationof 1 mean that the two variables exhibited linearrelationship
d. Causation implies correlation

877. If the correlation of height with age is given by the equation y=a + bc, what would be the nature of the graph :

a. Straight line b. Parabola
c. Hyperbola d. Sigmoid curve

878. What can be true regarding the coefficient of correlation between IMR and economic status :

a. r= +1 b. r= -1
c. r=+ 0.22 d. r=-0.8

879. Study finds a correlation coefficient of + 0.7 between self reported work satisfaction & expectancy of life in a random sample of 5000 corporate workers . (p=0.01).

a. Work satisfaction improves life expectancy
b. Strong statistically significant (+) associationbetween work satisfactionand life expectancy
c. 70% peoples who enjoy work shall live longer
d. 70% association between work satisfaction & life expectancy

880. A coefficient of correlation value of " r = +0.8" indicates :

a. Strong direct relationship between two variables
b. Strong inverse relationship between two variable
c. Insignificant association between two variables
d. One variable is the cause of the other variable

881. Mosquitoes decrease as height increases in :

a. Positive correlation
b. Negative correlation
c. Bidirectional
d. Zero correlation

882. Strong correlation is signified by a correlation coefficient of :

a. Zero b. 1
c. Less than 1 d. More than 1

874. d	875. a	876. a	877. a	878. d	879. b	880. a	881. b	882. b

883. 4 populations had correlation coefficients of 0.6, each for weight & height, when plotted together. What would be the net coefficient if correlation?

a. Same
b. Smaller
c. Greater
d. Can't be predicted

884. Type I sampling error is classified as :

a. Alpha error
b. Beta error
c. Gamma error
d. Delta error

885. The " P" value of a randomized controlled trial comparing operation A (new procedure) & operation B (Gold standard) is 0.04. From this , we conclude that :

a. Type II error is small & we can accept the finding of the study
b. The probability of false negative conclusion that operation A is better than operation B, whenin truth it is not , is 4%
c. The power of study to detect a differencebetween operationA & B = 96%
d. The probabilityof a false positive conclusion that operation ' Operation a Is betterthat operation " Operation A is better that operation B' , when in truth it is not , is 4%

886. Power of study can be increased by:

a. Increasing alpha error
b. Decreasing beta error
c. Decreasing alpha error
d. Increasing beta error

887. In assisting the association between maternal nutritional status and birth weight of the newborns, two investigators A and B studied separately and found significant results with p values 0.02 and 0.04 respectively . From this information, what can you infer about the magnitudes of association found by the two investigations :

a. The magnitude of association found by investigator A is more thanthat found by B
b. the magnitude of association Found byinvestigator B is more than thatfound by A
c. The estimates of associationobtained by A and B will be equalsince both are significant
d. Nothing can be concluded as the informationgiven is inadequate

888. A randomized trial comparing efficacy of two regimens showed that difference is statically signification with p <0.001 but in reality the two drugs do not differs in their efficacy . This is an example of :

a. Type-I (α error)
b. Type –II error (β error)
c. 1-a
d. 1-b

889. After applying a statistical test an investigator gets the ' P value ' as 0.01 . It means that :

a. The probabilityof finding a significant difference is 1 %
b. The probability of declaring a significant difference is 1%
c. The difference is not significant 1% times and significant 99%
d. The power of the test used in 99%

890. All are true about p - value except :

a. Is the probability of committing Type - I error
b. Is equal t o 1- b
c. Is the chance that the presence of difference is concluded when actuallythere is none
d. When p- value is less than alpha , the result is statistically significant

891. All are true except :

a. Alpha is the maximum tolerable probability of type - I error
b. Beta is the probability of type – II errors
c. When null hypothesis is true but is rejected , it is type - II error
d. P-value can be more or less than a

883. a	884. a	885. d	886. b	887. d	888. a	889. c	890. b	891. c

892. P- value is the probability of :

a. Not rejecting a null hypothesis when true
b. Rejecting a null hypothesis when true
c. Not rejecting a null hypothesis when false
d. Rejecting a null hypothesis when false

893. The risk factor association of smoking with pancreatic cancer was studied in a case control study. The values are:

Group	Odds ratio	95% confidence limits
A	2.5	1.0-3.1
B	1.4	1.1-1.7
C	1.6	0.9-1.7

Which of the following is correct?

a. Risk is more associated with group A
b. Risk is more associated with group B
c. Risk is more associated with group C
d. Risk is equally associated with all three groups

894. All of the following are true about standard error except :

a. As the sample size increases , standard error will also increase
b. Based on normal distribution
c. It depends on standard deviation of mean
d. Is used to estimate confidence limit

895. P- value is defined as :

a. Probability of declaring a significant difference when actually it is not present
b. Probability of declaring a significant difference when actually it is present
c. Probability of not declaring a significant difference when actually it is not present
d. Probability of not declaring a significant difference when actually it is present

896. If a 95% confidence interval for prevalence of cancer in smokers aged > 65 year is 56% to 76%, the chance that the prevalence could be less than 56% is :

a. Practically Nil b. 44%
c. 2.5% d. 5%

897. When we say that "the difference is significant" it mean that :

a. It is likely by chance and when P > 0.0.5
b. It is unlikely by chance and when p> 0.05
c. It is unlikely by chance and when < 0.05
d. It is likely by chance and when P < 0.05

898. What will be the 95 % CI for an estimated prevalence of 10% and a sample size of 100

a. Given data inadequate for calculation of class intervals
b. 2-18
c. 4-16
d. 7-13

899. In a test of significance , P value is 0.023 the observed difference in study can be considered as :

a. Null hypothesis accepted and the study is rejected
b. Null hypothesis rejected and the study is accepted
c. Null hypothesis accepted and the study is accepted
d. Null hypothesis rejected and the study is also rejected

900. If confidence is increased there:

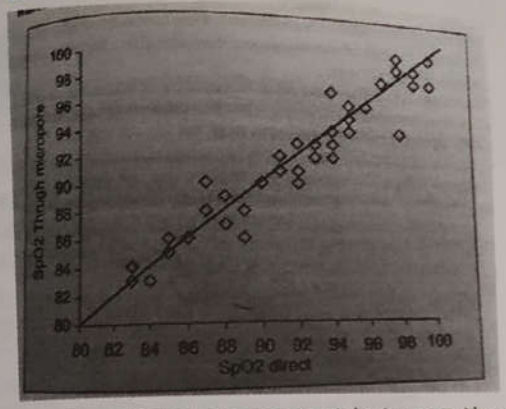
a. Previously insignificant data becomes significant
b. Previously significant data becomes insignificant
c. No effect on significance
d. Any change can happen

901. In a group of 100 people the GFR is 85 ml/ minute with a SD of 25. What is the range for 90% CI?

a. 70- 100 b. 75- 95
c. 81- 89 d. 80- 90

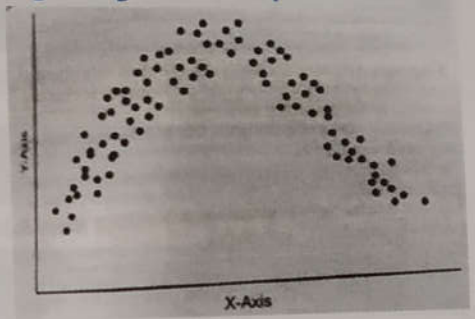
892. b	893. b	894. a	895. a	896. c	897. c	898. c	899. b	900. b
901. c								

902. In an agreement between SpO_2 of two groups with and without micropore in a pediatric population the values spotted is as below. Which of the following is true



a. There is not agreement between the two groups
b. The two groups have a constant relation with a variation of 3%
c. The is no association between the two groups
d. The curve shows a regression line means co relation

903. Which of the following is correct regarding the below picture?



a. Non -linear relationship
b. Linear relationship
c. Nothing can be inferred
d. Positive to - relation found

902. d	903. a

Biostatistics – Explanations

745. A. Quantitative data of a group of patients

Quantitative/ Continuous Data	Qualitative/ Discrete data	Miscellaneous
Histogram	Bar (most versatile)	Venn diagram
Frequency polygon	Pie/ Sector/ Roti/ Chappati	Tree diagram
Frequency curve		Stem & leaf plot
Line chart/ graph*		Pictogram/ Picture
Cumulative frequency diagram (ogive)		Spot Map
Scatter/ dot diagram		

746. A. Type of anemia (B) Severity

	Categorical Scales		Dimensional
	Nominal (least preferable)	Ordinal	Metric scales (most preferable)
Type of variable	Qualitative	Qualitative	Quantitative
Definition	No specific order, based on names	Ordered & graded into categories	Interval & Ratio scale
Examples	Race, Religion, **Blood Groups, Positive or Negative for HIV/ Hepatitis, Names of Hospitals, Type of disease (anaemia), Site of malignancy**	**TNM staging**, Social classes, **Severity of disease**	BGL, Hb, Serum chl., BP
Compare	Mode, Chi square	Median	Mean
Reported as		Percentage	Decimal points

747. D. Continuous

BP generally mistaken as a discrete variable because the sphygmomanometers we use provide us data only in fixed numbers but actually if we measure intra arterial values we can get BP in decimals as well

748. B. Continuous

There is no gaps in the pillars of histogram which indicates that it measures quantitative data; but in bar charts there is a gap so it measures discrete data

749. C. Gender

There is no quantity is gender; it is either male or female

750. D. Scatter plot

Scatter plot typically shows relationship

Diagram	Use
Line Diagram	Trends/ change of events with time
Scatter/ Correlation Diagram	Relationship
Histogram	Continuous data
Bar Diagram	Discrete data
Spot Map	Geographical distribution
Tree Diagram	Progression of diseases
Venn Diagram	Overlapping of diseases

751. D. Ordinal

Mild, moderate severe refers to ordered data

752. A. Interval/ Ratio scale

Mean and SD are calculated for metric scale and interval and ratio scales are examples of metric

753. D. Nominal data

Blood groups are just names so it is nominal data

754. A. Nominal

HIV positive or negative are just names so it is nominal data

755. C. Likert scale

Likert scale (graded in continuum) is a better answer than visual analogue scale (VAS); as VAS is an example of likert; if PGI then both would have been the answer

756. C. Line

Trends (change over a period of time) are shown on line diagram

757. C. Body weight

Race and sex are nominal

Socio economic status is ordinal (again a type of categorical scale; which is also includes nominal datas)

Body weight is quantitative data measured on metric scale

So best answer is C; if PGI then both C & D

758. B. Scatter diagram

Correlation/ relationship is seen best by scatter diagrams

759. A. Ordinal scale

Likert scale is a special type of ordinal scale where we summarize for human behaviour

760. A. Types of hospital

b. Severity of pain - mild/ moderate/ severe - ordinal

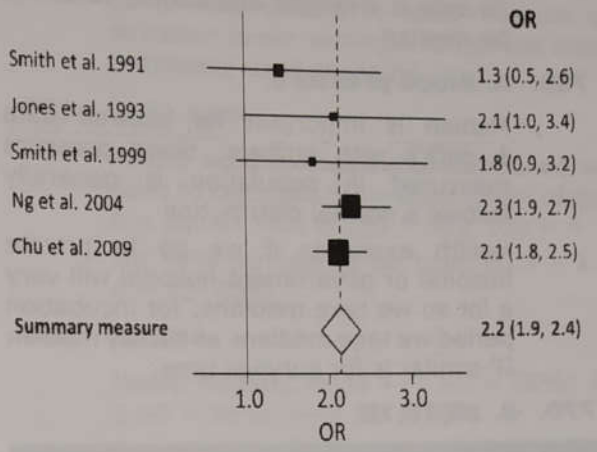
c. Height - measured in cms - metric

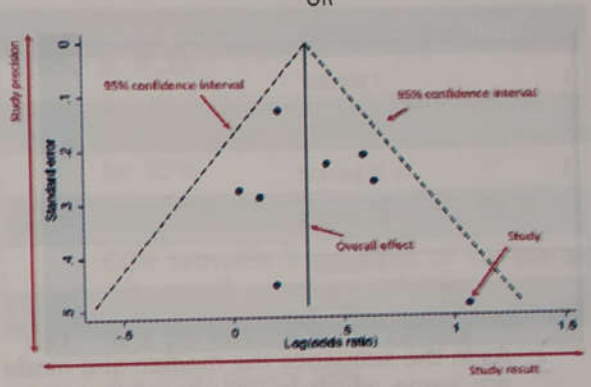
d. Grades of obesity - mild/ moderate/ severe - ordinal

761. D. Tree

Out of the options best answer is D; as doctor can draw a tree diagram to depict the progression of joint involvement

762. C. Stem & leaf plot





763. D. Box & Whisker Plot

Box whisker plot is a diagrammatic representation of a quartile

764. C. Median

Median as it is the middle of an ordered series

765. C. Median

The data is a non normal distribution (mean not equal to mode not equal to median) & also has outliers so most preferred would be median

766. A. 5

Mode (summary) = 3 * Median - 2 * Mean = 3 * 3 - 2 * 2 = 9 - 4 = 5

767. D. 20 kg

Total for 10 boys would be 18.2 * 10 = 182

To correct we add the extra 18 (as 20 was written as 2) so it is 200

Now mean is 200/ 10 = 20

768. B. Median

As data is arranged and middle value will be median

769. A. Blood pressure

Median is important for skewed data & data's with outliers; blood pressure measured in population is generally follows a normal distribution

Health expenses if we go to private hospital or government hospital will vary a lot so we take medians; for incubation period we take medians as we say median IP similar is for survival time.

770. B. 16,10,10

Year	Number of cigarettes
1	5 pieces
2	½ packet
3	½ packet
4	½ packet
5	1 packet
6	2 packet

As in the sequence the median and mode are same which is only possible only in option B

771. B. Increased mean, no change in median

As it is the highest data; there will be no change in the sequence so median won't change; but as the grand total will increase with 58 getting replaced with 85 so mean increases

772. B. 8

Arranging the data in sequence 7, 8, 8, 9, 10; median will be 8

773. B. Mode

Most frequently occurring data is the mode

774. B. Range is 20-38

Range (minimum to maximum values) - 20 to 38

Median - 31

Mode - 31

775. D. Chi-square test

Chi square is a statistical test & not a measure of central tendency

776. A. 100 equal parts

Centile refers to percentile which divides the data into 100 parts

777. B. Median

50th percentile is the central value which corresponds to median

778. C. 512

Manual method is 1 becomes 2 in twenty minutes and 2 becomes 4 in fourty minutes.....

Formula that can be used is 2 raised to power 9 (as 180/ 20 = 9 divisions)

779. C. 100 th

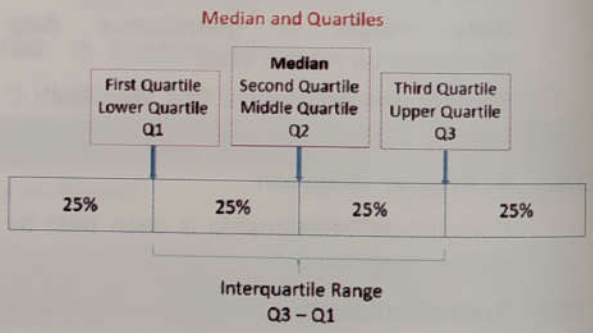
For 100 people 40th percentile means 40 so for 250 people it will be 40 * 250 = 100

780. D. 2 nd quartile

2nd quartile refers to middle value

For percentile middle value is 50th; tertile it is 2.5th; decile it is 5th

781. C. Third quartile



782. B. 50

As it is a quartile so 4 equal parts (assuming that it is normal which we need to assume if nothing is given in the question); so 200/ 4 = 50 so between 3rd & 4th we will have 50

783. B. 53.6

- Answer as per Routine MCQ book:
- Or, X = Mean + Z * SD
- Now Z for 5% is -1.645 so X = 70 + (-1.645) * 10 = 53.6
- Query:
- Who will come and tell us the value of Q in the exam

- So apply common sense
- Mean ± 2 SD = 95%: 70 ± 20 = 50 – 90
- Now 2.5% is divided on each of the 2 sides so, less than 50 there is only 2.5% but in question they have asked as 5% so any value more than 50 but less than 60 (Mean ± 1 SD)

784. C. Central tendency

Standard deviation provides measure of dispersion/ deviation

785. A. 25%

COV = SD/ mean * 100; for normal data mean = median = mode so same formula will apply

COV = 3/ 12 * 100 = 25%

786. A. 0.4

SE = SD/ square root of n

SE = 2/ square root of 25 = 2/ 5 = 0.4

787. B. Sampling errors

Sampling errors is the error occurring because from the same population multiple samples can be taken & each sample differs from others to some extent

788. B. 0

As all babies the birth weight is same which means there is no variation so SD will be 0

789. A. Original std. Deviation x 10

If some one has 10 rupees and expense is 1 rupees; now if multiply the amount of money you have by ten then expense should also multiply by 10 (simple logic) for the question

Other way round is we go into the detailed calculation of SD from mean values where we know if we multiply each value by ten then the mean difference will be squared and then for SD we do square roots so again same multiplication factor will be there

790. D. 1.0

Z = (X - mean)/ SD = (15 - 13.5)/ 1.5 = 1

791. D. Correlation

r coefficient is used in correlation and regressions

792. D. Standard deviation

SD is most commonly used measure of deviation in our settings; range was most commonly used in maths

793. C. 72-88%

As the word confidence is mentioned we need to calculate SE = square root of pq/ n = square root of (80 * 20)/ 100 = 4

For 95% confidence we have 80 + - 2 * 4 = 72- 88%

794. A. 0.34

Mean/ Median/ Mode +- 1 SD = 68%; +- 2 SD = 95%; +- 3 SD = 99%

So half of it is 34%

795. B. 0,25

As 13.5 is the mean value and it is a normal distribution so more than it will be 50%

796. B. Coefficient of variation

COV provides a measure of comparison between 2 unknown variables

797. A. 1 SD covers 95% values

+ - 1 SD covers 68%

798. A. 210-250

As the Confidence limits are mentioned so we use SE; Mean +- 2 SE = 95%; so 230 +- 2 * 10 = 210 to 250

799. D. Correlation and regression

Correlation & regression give relationship & not dispersion

800. A. Mean and standard error

For Confidence calculations we need SE; which is calculated from SD & sample size

801. A. Normal distribution

Z score is applicable for normal distribution of data & not for other forms of distribution

802. B. S= Square root of V

Variance = $(SD)^2$

803. B. 69 and 75 kg

As CI is mentioned so we calculate the SE = SD/ square root of n = 15/ square root of 100 = 1.5

So for 95% CI it is Mean +- 2 * SE = 72 + - 2 * 1.5 = 69 to 75

804. A. Standard deviation

Standard deviation is root mean square

Mean deviation is an intermediate step in calculation of SD

805. A. Standard deviation

This is definition of SD; SE (mean) = SD/ square root of mean

SE (proportion) = Square root of pq/ n

806. D. Poisson distribution

Head injury admission rates follows a poisson distribution i.e; probability unpredictable distribution. Ex: If on Monday there are 30 admission; Tuesday there are 33 we can never predict how many admission on Wednesday; in case of some untoward event the numbers might vary a lot

807. D. Has standard deviation = 0.0

Features of a normal distribution:

- Bell shaped (bilaterally symmetrical)
- Mean = median = mode = 0
- SD = 1
- Variance = $(SD)^2$
- Area under the curve = 1 or 100%

808. C. Mean and standard deviation

Mean/ Median/ Mode +- 1 SD = 68%; +- 2SD = 95%; +- 3SD = 99%

809. B. 85 and 125 mgs

Mean/ Median/ Mode +- 2SD = 95% i.e, 105 +- 2 * 10 = 85 to 125

810. C. 99% of all children weight between 12 and 18 kg

Mean/ Median/ Mode +- 2SD = 95% i.e, 15 +- 2 * 1.5 = 12 - 18

811. A. Less than median

Normal Distribution: Mean = Median = Mode

Left/ negatively skewed: Mean < Median < Mode

Right/ positively skewed: Mode < Median < Mean

812. D. Nothing can be said conclusively

When the mean = SD then nothing conclusively can be said

813. B. 150

Quartiles means 4 equal parts so 300/ 4 = 75; now in between 1.5 to 4.5 it has 1st to 3rd quartiles so it will have 75 + 75 = 150

814. B. 95%

Mean/ Median/ Mode +- 1 SD = 68%; +- 2SD = 95%; +- 3SD = 99%

These above theorem is for MCQ but actually it 1.96 SD which accounts for 95%; 68.7% for 1 SD; 99.4% for 3 SD

815. C. Negatively skewed

Normal Distribution: Mean = Median = Mode

Left/ negatively skewed: Mean < Median < Mode

Right/ positively skewed: Mode < Median < Mean

816. B. 50

As mean is 86 so 50% people would be above it so if sample size is 100 so 50 people would be above it

817. A. Mean - mode / SD

Karl Pearson's Coefficient of skewness:-

The formula for measuring skewness as given by Karl Pearson is as follows

$$SK_P = \frac{\text{Mean} - \text{Mode}}{\sigma}$$

Where,

SK_P = Karl Pearson's Coefficient of skewness,

σ = standard deviation

818. A. Outliers

Q test is used to see for outliers

819. B. 7.31 gm/ dL

5% comes in between 2.5% and 16% so for 2.5% it – 2 SD so 10.6 – 2 * 2 = 6.6 & for 16% it is – 1 SD so 10.6 – 1 * 2 = 8.6 so values will come in between the two

820. A. 68%

Mean/ Median/ Mode +- 1 SD = 68%; +- 2SD = 95%; +- 3SD = 99%

821. D. Mean and median = 1

Features of a normal distribution:

- Bell shaped (bilaterally symmetrical)
- Mean = median = mode = 0
- SD = 1
- Variance = $(SD)^2$
- Area under the curve = 1 or 100%

822. A. Standard deviation and mean

Mean/ Median/ Mode +- 1 SD = 68%; +- 2SD = 95%; +- 3SD = 99%

But in normal data the most preferred is the mean so better answer is SD and mean

823. B. Power of the study

For observational studies which are used to calculate the prevalence n = $4pq/ d^2$ so there is no need of power (power is needed for interventional studies)

824. D. 13-24 months

For immunization coverage evaluation we take 30 villages in random from a district and 7 children randomly from each of these villages of age group of 13 to 24 months to assess full immunization so a total of 210 children is taken (full immunization who have taken 7 vaccines before the age of 1 year). This is a method of cluster sampling but this method is now obsolete.

825. D. Cluster testing

Cluster testing is a method of contact tracing used in skin and venereal diseases and is not same as cluster sampling.

826. D. The drop out rate increases

There is a very complex formula for this question which is not needed for MCQ exams so going by common sense if the number of people leaving the study increases i.e, the drop out then we would need a greater sample size

827. D. Stratified rand sampling

This is stratified sampling as meaningful groups have been made (word certain is mentioned).

828. A. Sample size same as simple random

In case of cluster the design effect is 2 that is the sample size of cluster is double of simple random sampling

829. D. Cluster random sampling

Design effect is a correction factor used for the type of sampling used. It is used as a multiplication factor. For cluster it is 2; for stratified it is less than 1 and for simple and systematic it is 1.

So for cluster the sample size doubles; for stratified it reduces as compared to simple & systematic

830. D. 400

Sample size = $4pq/d^2$ = 4 * 50 * 50/ 5 * 5 = 400 (d here is 5 as 50 +- 5)

831. C. Homogenous population

a. Vaccinated people – cluster sampling

b. Heterogeneous population – stratified sampling

c. Homogenous population – simple random

832. A. Heterogeneous data

Heterogeneous sampling best is stratified; the other option is systematic.

833. D. 30 cluster of 7 children

For immunization coverage evaluation we take 30 villages in random from a district and 7 children randomly from each of these villages of age group of 13 to 24 months to assess full immunization so a total of 210 children is taken (full immunization who have taken 7 vaccines before the age of 1 year). This is a method of cluster sampling but this method is now obsolete.

834. D. Multistage sampling

Three stages – school, section & then student.

Simple is one stage sampling; whereas stratified & cluster are two stage sampling

835. D. 5

This is a common sense question; 1- 5, 6- 10, 11- 15, 16- 20, 21 – 25 so 5 class intervals to cover the data of 25

Other class intervals won't be suitable

836. A. Quota sampling

Random	Non- random
Probability/ Non – purposive	Non probability/ purposive
Simple random	Convenience
Systematic random	Quota
Stratified	Snow ball – for hidden population
Cluster random	
Multistage	
Multiphase	

837. C. Systematic random sampling

This is a systematic sampling as a particular symptom is being used to obtain the participants

838. B. Equal chance to each for collection of certain number for a sample

c. Picking every 5th or 10th at regular interval: systematic

d. Sampling represent a corresponding strata of universe: stratified

839. C. 0.001

Probability for one person is 0.1 so for 3 people it is 0.1 * 0.1 * 0.1 = 0.001

840. D. 0.0256

If in the ques it is asking either / any one having the probability, then probability increases so addition. If they ask - probability of having disease together / both having the disease. Probability decreases , so multiply

841. B. 0.70

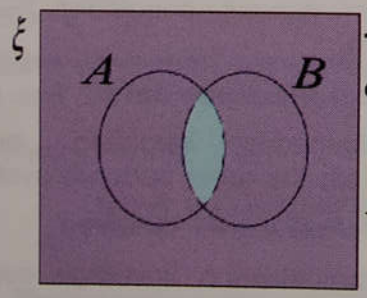
As it is dependant so we add the two probabilities that is 0.2 + 0.5 = 0.7

842. B. 3:1

Odds = P/ (1 – P) = 0.75/ 0.25 = 3

843. A. Prob (A or B) = Prob (A) + Prob (B)

MUTUALLY EXCLUSIVE EVENTS

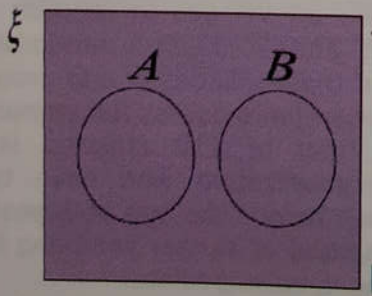


The probability of event A or event B occurring / not mutually exclusive

P(A or B)

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$P(A \cap B) \neq 0$$



The probability of event A and event B mutually exclusive.

P(A or B)

$$P(A \cup B) = P(A) + P(B)$$

because $P(A \cap B) = 0$

844. B. 3/5

There are total 30 patients needing surgery out of 50 patients (boys & girls have been given to confuse)

845. D. 1 in 5

On the right of 95% it is 5% which is a probability is 1 in 20

846. C. Paired t test

a. Number of groups = 2
b. Paired
c. Output variable = quantitative
d. Algorithm 2 = paired t test

847. C. Standard error of difference between two proportion

Proportion refers to square root of pq/ n

848. B. That asmaller proportion of people who were immunizedagainst chickenpox subsequentlydevelop zoster than those who were not immunized

Chi square is a non parametric test which compares the proportion; in option a, b & c we have comparison of mean

	Parametric	Non – parametric
Distribution	Normal	Non – normal
Type of output data	Quantitative	Qualitative
Sample Size	Large (n> 30)	Small (n < 30)
Compares	Mean (SD)	%, proportions & fraction

849. A. Chi square test

a. Number of groups = 2
b. Un Paired
c. Output variable = qualitative (generally student see numbers and mark as quantitative but only number refers to frequencies; number + metric scale makes it a quantitative variable)
d. Algorithm 1 = chi square

1. Categorical vs Categorical

2 groups		> 2 groups
Unrelated	*Related*	*Unrelated*
-Chi square test	McNemar test	- Chi square test
- Fishers Exact test		- Fishers Exact test

* 1 degree of freedom in chi square test, the value of chi square for a probability of 0.05 is 3.84

850. C. T

a. Number of groups = 2
b. Un Paired
c. Output variable = quantitative
d. Algorithm 2 = un paired t test

2. Categorical vs Quantitative

Parametric		Non-Parametric	
2 groups		2 groups	
Unrelated	*Related*	*Unrelated*	*Related*
Unpaired t test / Student t test	Paired 't' test	Wilcoxon ranksum/ Mann Whitney	Wilcoxon (matched pair) signrank
> 2 groups		> 2 groups	
Unrelated	*Related*	*Unrelated*	*Related*
One way ANOVA/ F test	Repeated measures ANOVA (MANOVA)	Kruskal Wallis	Freidmans test

77

851. B. Paired t test

a. Number of groups = 2
b. Paired
c. Output variable = quantitative
d. Algorithm 2 = paired t test

852. D. Chi- Square test

a. Number of groups = 2
b. Un Paired
c. Output variable = qualitative (birth weight is over here taken as low or normal)
d. Algorithm 1 = chi square

853. C. 9

Degree of freedom = (Column – 1) * (Row – 1) = (4 – 1) * (4 -1) = 3 * 3 = 9

854. A. Paired t- test

a. Number of groups = 2
b. Paired
c. Output variable = quantitative
d. Algorithm 2 = paired t test

855. B. Student's test

a. Number of groups = 2
b. Un Paired
c. Output variable = quantitative (lowering)
d. Algorithm 2 = paired t test

856. A. Mean & SD of the groups

Chi square is a non parametric test so mean is not required for analysis

	Parametric	Non – parametric
Distribution	Normal	Non – normal
Type of output data	Quantitative	Qualitative
Sample Size	Large (n> 30)	Small (n < 30)
Compares	Mean (SD)	%, proportions & fraction

857. B. Student's t test

Student t test is a parametric test used to compare 2 means

858. D. Measures of central tendency

Mean, median & mode refer to the center of any data distribution

859. B. 6

Degree of freedom = (Column – 1) * (Row – 1) = (3 – 1) * (4 -1) = 2 * 3 = 6

860. D. One way analysis of variance (one way ANOVA)

a. Number of groups = > 2 (males, females of each class in school)
b. Un Paired
c. Output variable = quantitative (difference in heights)
d. Algorithm 2 = one way ANOVA

861. C. Directly measures the strength of association

Strength of association is measured by relative risks

862. A. 900

At 95% confidence (obtained from alpha = 5%; Confidence = 100 – alpha);
$n = 4pq/^2$
Power has no role to play in sample size calculation for observational studies (evident from word prevalence)
Absolute precision = Relative precision of Prevalence = 20 * 10 = 2%
n = 4 * 10 *(100- 10)/ (2 * 2) = 900

863. D. Chi square test

a. Number of groups = 2
b. Un Paired
c. Output variable = qualitative (birth weight is over here taken as low or normal)
d. Algorithm 1 = chi square

864. A. Significance of difference between two proportions

Chi square is a statistical test which measures association and provides the comparison between 2 proportions

865. D. Age in years and months

Blood groups are discrete values as can't take in between values

	Discrete	Continuous
Definition	Takes few possible values & no in between values	Takes in between value as well
Examples	No. of children living in the family	Weight, Height, MAC, Temperature (F/C), Blood sugar level, BMI, Hb, Serum cholesterol. Blood pressure (mm Hg)
Scale for measurement	Nominal/ Ordinal	Metric

866. C. 3.84

At 95% confidence with 1 degree of freedom value of chi square is 3.84

867. C. Stratified random sampling

Stratified sampling refers to meaningful sampling; meaningful means the potential factors that affect the results

868. A. < 0.001 is statistically significant

Explanation for other options:
b. More samples are related to less errors.
c. In chi square we take qualitative data
d. Tests association

869. A. Unpaired t test

a. Number of groups = 2
b. Un Paired
c. Output variable = quantitative (mean + SD is mentioned)
d. Algorithm 2 = Unpaired t test

870. B. To compare means in 3 or more groups

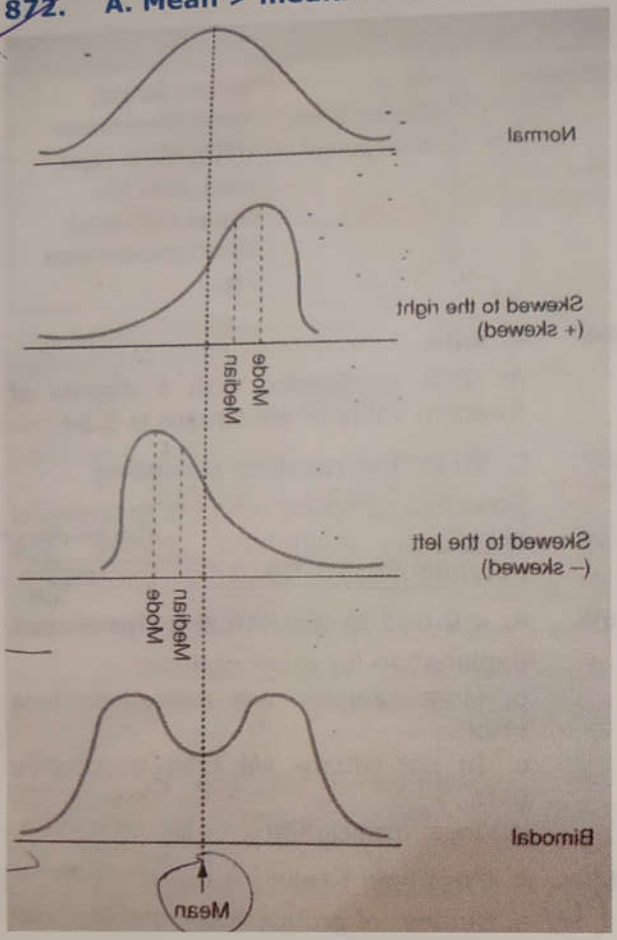
ANOVA is a parametric test used to compare more than 2 groups

871. B. Negatively skewed

Example data set to prove that APGAR score will be left skewed

Child	Score	Child	Score
1	10	6	6
2	9	7	5
3	8	8	7
4	10	9	10
5	10	10	9
Mean – 8.4; Median – 9; Mode – 10			
Inference – Left Skewed			

872. A. Mean > median > mode



873. D. Cox proportional hazards test

Cox proportional hazard test is a special type of regression used for comparing survival

874. D. The lecturer has reportedthe correlation coefficient incorrectly

'r' ranges from -1 to +1 so a r of 1.24 is a wrong calculation

875. A. Since there is a high correlationthe magnitudes of boththe measurements are likely to be close to each other

'r' tells about relationship only; it doesn't tell about association/ causation/ absolute magnitude of variables

876. A. It indicates degree of association between two characteristics

'r' tells about relationship only; it doesn't tell about association/ causation/ absolute magnitude of variables

If causation is present then it means association & correlation will be present

877. A. Straight line

This is the equation of straight line

878. D. r=-0.8

With socio economic development IMR will reduce but this doesn't mean that it is solely dependant on socio economic status

879. B. Strong statistically significant (+) associationbetween work satisfactionand life expectancy

Regression only refers to relationship & can't talk about association but when p value is significant it talks signifies association

880. A. Strong direct relationship between two variables

+ indicates direct relationship; whereas 0.8 is strong (1 would be perfectly positive)

881. B. Negative correlation

This means a negative correaltion

882. B. 1

'r' ranges from – 1 to + 1

883. A. Same

As all four have same correlation coefficients so the net coefficient will also remain the same

884. A. Alpha error

Types of Error	
Alpha/ type I error	**Beta/ type II error**
False positive	False negative
More dangerous	Less dangerous
Pre-set so doesn't depend on sample size	Depends on sample size
In reality Ho is correct but in RCT Ha has been proved to be correct	In reality Ha is correct but in RCT Ho has been proved to be correct
To prove efficacy of a new drug researcher prefers to do such an error	To prove lower side effects of a new drug researcher prefers to do such an error

885. D. The probabilityof a false positive conclusion that operation ' Operation a Is betterthat operation " Operation A is better that operation B', when in truth it is not, is 4%

Type II error, false negative are all related to power whereas false positive is related to p value which is type I error

886. B. Decreasing beta error

Power = 1 – beta error; Confidence = 1 – alpha

887. D. Nothing can be concluded as the informationgiven is inadequate

When p values of both the alternatives is less than 0.05 then nothing can be conclusively said

888. A. Type-I (a error)

In reality null hypothesis is correct (drugs don't differ); in RCT the 2 drugs are different; so the point of intersection will be alpha error

Treatments are not different		REALITY	
		Treatments are different	
POSSIBLE CONCLUSIONS	We conclude treatments are **not different** from each other	CORRECT DECISION	TYPE II ERROR/ BETA
	We conclude treatments are **different** from each other	TYPE I ERROR/ ALPHA	CORRECT DECISION/ POWER/ 1 - BETA

889. C. The difference is not significant 1% times and significant 99%

- Explanation: p value is 0.01; it means that the probability of committing type-1 error is only 1%. So, 99% chance is that there is significant difference present between two interventions, which means we can reject null hypothesis and accept alternate hypothesis
- So, the best answer will be c

890. B. Is equal t o 1- b

Option B represents power

891. C. When null hypothesis is true but is rejected , it is type - II error

Option C refers to alpha

Types of Hypothesis	
NULL HYPOTHESIS (Ho)	ALTERNATE HYPOTHESIS (Ha/ H1)
2 things are same	2 things are not same
Drug 1 = Drug 2	Drug 1 ≠ Drug 2
Comparison between alpha error and p value	
Alpha error	p value
Pre set cutoff	Calculated after research
Interpretation of p value	

p value > alpha	p Value ≤ alpha
Statistically insignificant	Statistically significant
Ho is true and Ha is false	Ha is true and Ho is false

892. B. Rejecting a null hypothesis when true

P value refers to alpha which is rejecting the null hypothesis when it is true in reality

893. B. Risk is more associated with group B

Interpretation of confidence

a. If confidence limits touch the null/ neutral value it becomes insignificant

b. More the point estimate, better it is

c. Narrow CI is better

- Larger sample size
- Smaller SD

Sequence of applying A> B> C

In study A & C the CI is touching the null value (for OR's it is 1) so it becomes statistically insignificant & only study B is significant

894. A. As the sample size increases , standard error will also increase

SE = SD/ square root of n so if n increases; SE decreases

895. A. Probability of declaring a significant difference when actually it is not present

P value refers to type I error which is null hypothesis is true (not significant) in reality but making a mistake & proving that the alternate hypothesis is correct (significant)

896. C. 2.5%

In normal distribution for population Mean +- 2 SE = 95%; limits of which is from 56 to 76%; less than 56% we will have 2.5%

897. C. It is unlikely by chance and when < 0.05

P > Alpha	P < Alpha
Statistically insignificant Due to chance	Statistically significant Unlikely due to chance
Null hypothesis could not be rejected	Null hypothesis is rejected

898. C. 4-16

- Calculate SE of proportion = Square root of pq/ n
- Then to get 95% use Prevalence ± 2 SE
- 10 ± 2 * 3 = 4- 16

899. B. Previously significant data becomes insignificant

P value < 0.05 is significant which means null hypothesis is rejected and study accepted

900. B. Null hypothesis rejected and the study is accepted

- When confidence limit is increased, a previously significant value becomes less significant or insignificant
- When compared to 99% CI, 95% CI is "More precise but less accurate"
- Wider CI: less precise & more accurate

901. C. 81- 89

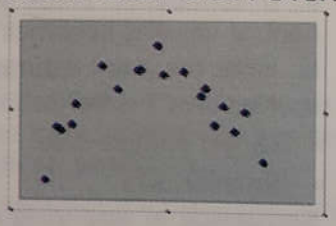
902. D. The curve shows a regression line means co relation

There is a strong positive correlation and if there is a relationship both correlation and regression will be present

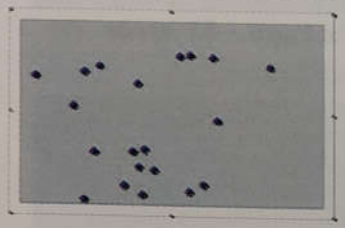
903. A. Non -linear relationship

Nonlinear versus No Correlation

- Nonlinear correlation and no correlation



Nonlinear Relation



No Relation

- Both sets of variables have $r = 0.1$, but the difference is that the nonlinear relation shows a clear pattern

Communication for Health Education – Questions

904. Which of the following is the correct sequence of various components of the communication process?

a. Receiver Message Channel Feedback Sender
b. Sender feedback Message Channel Receiver
c. Sender Message Channel Receiver Feedback
d. Message Sender Channel Feedback Receiver

905. Lecture Method of teaching is a type of:

a. Socratic method
b. Didactic method
c. Non- verbal communication
d. Visual communication

906. One of the methods of health communication where 4 to 8 persons who are qualified to talk about the topic and discuss a given problem or topic in front of a large group or audience in sequence. This method is called as

a. Symposium b. Panel discussion
c. Workshop d. Seminar

907. True about mass media education except:

a. Rapid
b. Cheapest
c. Distorted information
d. Addresses local community needs

908. A tool for increasing consensus among a large no of people is:

a. Chalk and talk (lecture)
b. Delphi method
c. Television
d. Interpersonal communication (IPC)

909. GATHER approach is useful for:

a. Chlorination of water
b. Counselling
c. Refuse disposal
d. Data analysis

910. A series of speeches is given by experts but there is not discussion among speakers. This is seen in:

a. Symposium
b. Lecture
c. Panel discussion
d. Workshop

911. The most effective method for motivating a couple for adopting family planning practices is:

a. Printed material
b. Films and television
c. Group discussion
d. Interpersonal communication

912. All are a type of audio- visual aids except:

a. Television
b. Cinema
c. Flannel graph
d. Slide tape combination

913. All are true for a group discussion except:

a. Not a very effective method of health communication
b. Ideally a group should comprise of 6-12 members
c. Can lead to exchange in health attitudes and behaviour
d. Allow free exchange of ideas and opinions

914. Best method of teaching an urban slum about ORS is:

a. Lecture
b. Role play
c. Demonstration
d. Flash cards

904. c	905. b	906. a	907. d	908. b	909. b	910. a	911. d	912. c	913. a
914. b									

915. Counselor must have all except:

a. Sensitivity
b. Empathy
c. Understanding
d. Patience

916. Which method is used for HIV pretest counseling?

a. Individual approach
b. Group approach
c. Mass media
d. All of the above

917. Principles of health education include all except:

a. Participation
b. Motivation
c. Reinforcement
d. Punishment

918. All of the following are approaches to health education except:

a. Service approach
b. Regulatory approach
c. Health education approach
d. Mass media

919. All of the following can be done with individual as a unit except:

a. Drug administration
b. Vaccination
c. Health education
d. Case report

920. Which of the following statement refers to propaganda?

a. Appeal to emotion
b. Develops individuality
c. The process is behaviour centred
d. Makes people think for themselves

921. In which model of health education does 'internalization' occurs

a. Medical model
b. Socio - environmental model
c. Service model
d. Motivation model

922. Health education charts serially flashed to the groups as the talk is being given is called as:

a. Flannel graph
b. Flip charts
c. Flash cards
d. Exhibition charts

923. Most persuasive and effective media system for communication is:

a. Inter personal communication
b. Mass media (TV, radio)
c. Folk media
d. Printed media

915. a	916. a	917. d	918. d	919. c	920. a	921. d	922. b	923. a

Communication for Health Education – Explanations

904. C. Sender Message Channel Receiver Feedback

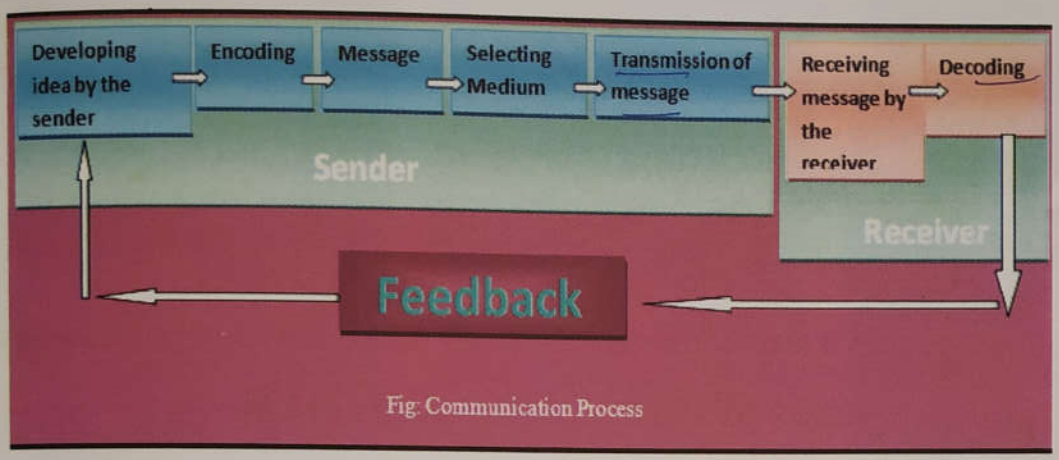


Fig: Communication Process

905. B. Didactic method

One way	Two way	Face to face
Didactic	Socratic	Verbal/ interpersonal
• TV • Radio • Internet • Newspaper	• Lecture • FGD • Panel discussion • Symposium • Workshop	• Advice • Counselling (Overall best)
• Large audience • Cheap	• Active audience • Behaviour change	Behaviour change
• Uncontrolled behaviour change • Delivers message even if message is unacceptable	• Costly • Limited audience	• More costly • More time • Limited audience

906. A. Symposium

- Focussed Group Discussion:
  - 10- 12 members
  - 1 moderator
  - Discuss on 1 issue
  - Disadvantage: unequal/ useless discussion
- Panel Discussion:
  - 4 to 6 experts discuss in front of large audience
  - No order of speaking
  - Disadvantage: Useless quarrels
- Symposium:
  - Series of speeches by experts on a single topic
  - Integrated teaching
  - Ex: DM
- Workshop: practical skill-based learning
- Demonstration (didactic)
  - Practical usage is demonstration
  - Ex: Making of ORS by ASHA worker

907. D. Addresses local community needs

Features of Mass media education (Didactic method):

- LARGE AUDIENCE
- CHEAP
- UNCONTROLLED BEHAVIOUR CHANGE
- DELIVERS MESSAGE EVEN IF MESSAGE IS UNACCEPTABLE

908. B. Delphi method

Delphi method

- Systematic interacting forecasting method
- Obtaining consensus forecasts from a panel of independent geographically dispersed experts

909. B. Counselling

GATHER approach is used for counselling purposes in case of emergency contraceptive pills

Stages of Counselling -GATHER

- G = Greet client in a friendly, helpful, and respectful manner.
- A = Ask client about needs, concerns, and previous use.
- T = Tell client about different options and methods.
- H = Help client to make decision about choice of method s/he prefers.
- E = Explain to client how to use the method.
- R = Return: Schedule and carry out return visit and follow-up of client

910. A. Symposium

Two Way Communication

Panel Discussion	Symposium
Similarities	
3 – 4 experts discuss on an issue in front of a large audience; audience can ask question generally at the end of the session	
Differences	
Non-sequential	Sequential
Experts can discuss with each other in middle	Experts can't discuss with each other in middle

911. D. Interpersonal communication

Family planning is a sensitive issue and for a couple face to face/ inter personal communication is the best method to deliver any form of health message

912. C. Flannel graph

913. A. Not a very effective method of health communication

Group discussion is a mode of two way communication which provides a very effective way of communication

914. B. Role play

Role play helps in providing a practical demonstration and also usage of the ORS

915. A. Sensitivity

Characteristics or qualities of counsellor...

Interpersonal relationships:
- ✓ Friendly nature
- ✓ Sympathetic understanding
- ✓ Sincerity
- ✓ Tactfulness
- ✓ Patience
- ✓ Ability to maintain confidentiality
- ✓ Attentive listener
- ✓ Show concern

Personal adjustment:
- ✓ Maintain emotional stability
- ✓ Emotionally sound & healthy
- ✓ Able to accept criticism
- ✓ Knowledge of self
- ✓ Patience

Scholastic potentialities:
- ✓ Relevant knowledge
- ✓ Motivated & committed
- ✓ Aware of policies, beliefs, misconception & rumors in community
- ✓ Possess common sense
- ✓ Good judgment

916. A. Individual approach

In HIV we go for ICTC (Integrated Counselling & Testing Center); which is a private counselling session. The same is used for posttest counselling.

917. D. Punishment

PRINCIPLES OF HEALTH EDUCATION

1. CREDIBILITY
2. INTEREST
3. PARTICIPATION
4. MOTIVATION
5. COMPREHENSION
6. REINFORCEMENT
7. LEARNING BY DOING
8. KNOWN TO UNKNOWN
9. SETTING AN EXAMPLE
10. GOOD HUMAN RELATIONS
11. FEEDBACK
12. COMMUNITY LEADERS
13. SOIL, SEED, SOWER

918. D. Mass media

APPROACH IN HEALTH EDUCATION

1. Regulatory Approach(Managed Prevention)
2. Service Approach
3. Educational Approach
4. Primary health care Approach

919. C. Health education

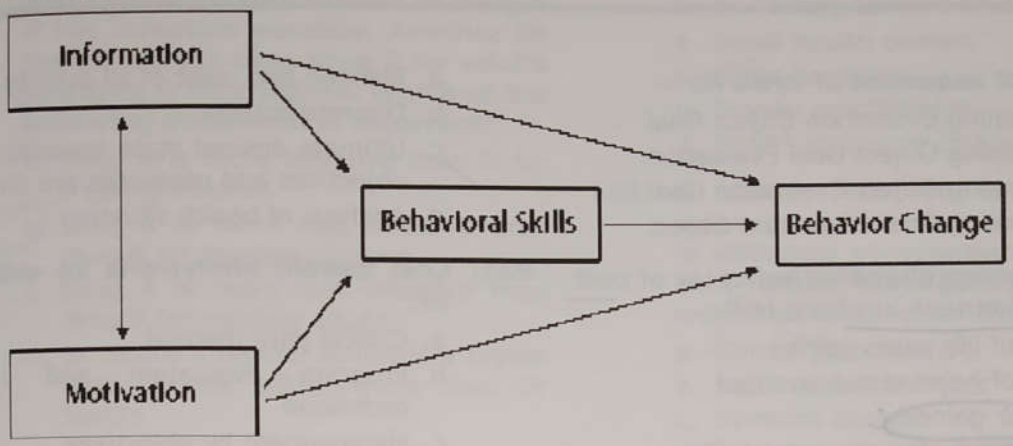
Health education is a mass approach

920. A. Appeal to emotion

Five characteristics of propaganda

- Propaganda is in the eye of the beholder.
  - "I'm persuading. The other guy is using propaganda."
- Propaganda has a strong ideological bent.
  - example: PETA, Queer Nation, or the Army of God
- Propaganda is institutional in nature. It is practiced by organized groups
  - governments, corporations, social movements, special interests
- Propaganda relies on mass persuasion
  - television, radio, internet, billboards
- Propaganda tends to rely on ethically suspect methods of influence.
  - deception, distortion, misrepresentation, or suppression of information.

921. D. Motivation model



922. B. Flip charts

923. A. Inter personal communication

Inter personal communication is face to face communication leading to maximum behaviour change

Health Planning and Management – Questions

924. Correct sequence of cycle is:
a. Planning Evaluation Object Goal
b. Planning Object Goal Evaluation
c. Planning Object Evaluation Goal
d. Planning Goal Evaluation Object

925. Most comprehensive indicator of cost effectiveness analysis is:
a. No of life years gained
b. No of heart attack avoided
c. DALY gained
d. Cost per life year gained

926. Time taken for any project is estimated by:
a. Work sampling
b. Input output analysis
c. Network analysis
d. System analysis

927. The management technique which is more promising tool for application in health field is:
a. Cost effective analysis
b. Cost benefit analysis
c. Cost accounting
d. Input output analysis

928. All are true regarding critical path method (CPM) except:
a. Is a part of input output analysis
b. Visualized in graphical representation of all events / activities carried out
c. Is the longest part of the network
d. Any delay in CP delays whole project

929. When the economic benefits of any program are compared with the cost of the program it is called:
a. Cost benefit analysis
b. Cost effective analysis
c. Cost accounting
d. Input output analysis

930. In management 'Goal' refers to:
a. Planned end point of all activity
b. Discrete activity
c. Ultimate desired state towards which objectives and resources are directed
d. Analysis of health situation

931. Cost benefit analysis is an example of:
a. Critical path method
b. Program evaluation and review technique
c. Management by objectives
d. Total quality management

932. True about "Zero base budgeting" is:
a. Relies on data previous budget
b. Proceeds from resources to target
c. Proceeds from target to resource
d. Not a priority-based budgeting

933. Analysis done for expenditure of large proportion for small number and vice versa:
a. ABC
b. SDE
c. VED
d. FSN

934. Which one of the following is a quantitative method of health management?
a. Cost effective analysis
b. Human resource management
c. Communication management
d. Supportive supervision and leadership

935. Drugs A & B are both used for treating a particular skin infection. After one standard application, drug A eradicates the infection in 95% of both adults and children. Drug B eradicates the infection in 47% of adult & 90% children. There are otherwise no significant pharmacological differences between the two drugs, and there are no significant side effects. However, the cost of drug A is twice that of drug B.

924. b	925. c	926. c	927. a	928. a	929. a	930. c	931. d	932. c	933. a
934. a									

Dr. Sunil, always uses drug B for the first treatment and resorts to drug A if the infection persists. Another Dr Sudhir always uses drug A for adults and drug B for children. Which of the following statement is incorrect?

a. Drug A is more effective than B for treating children
b. Drug A is more cost effective than drug B for treating children
c. Drug A is more cost effective than drug B for treating adults
d. Dr Sudhir's regime achieves a higher level of cost effectiveness than Dr Sunil's

936. All are elements of evaluation except

a. Repeatability b. Relevance
c. Acceptability d. Effectiveness

937. Which of the following are referred to as "Ivory towers of disease":

a. Small health centers
b. Large hospitals
c. Private practitioners
d. Health insurance companies

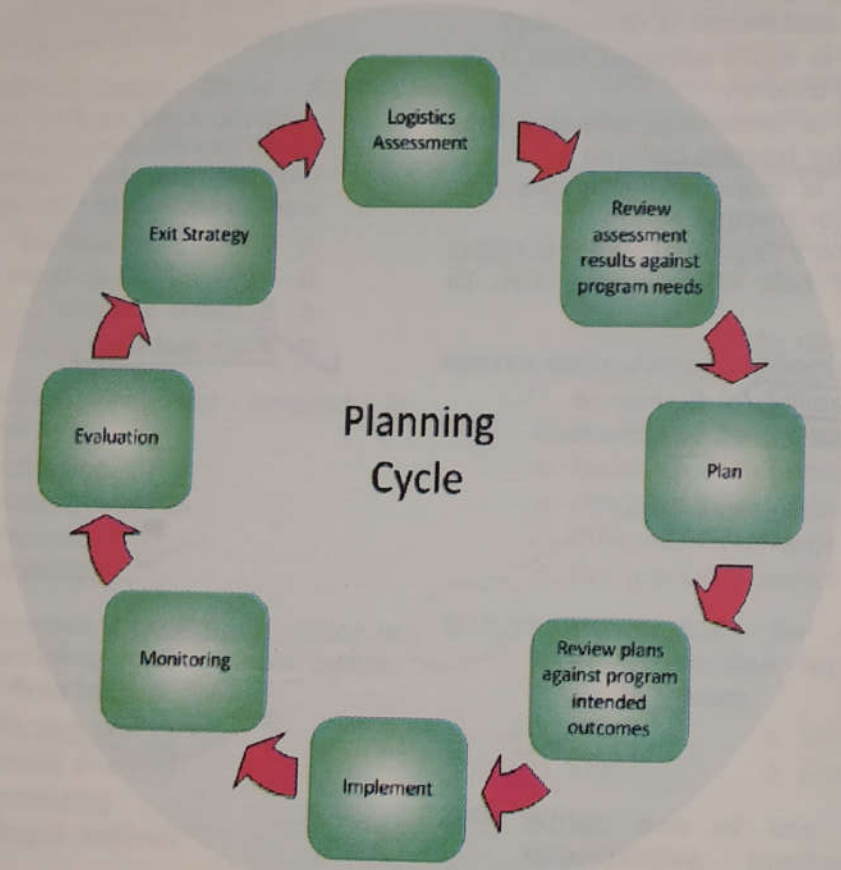
938. A study was conducted among nursing staff to find out time taken in different components of patients care. Which management technique would be applied for the analysis?

a. Critical path method
b. Input output analysis
c. Systems analysis
d. Work sampling

935. b	936. a	937. b	938.d

Health Planning and Management – Explanations

924. B. Planning Object Goal Evaluation



925. C. DALY gained

Types	Input	Output
CEA	DOLLARS	DALY, HALE
CUA		QALY
CBA		Dollars

926. C. Network analysis

Network Analysis: Graphic plan of all events & activities

- PERT (programme evaluation & review technique): updated progress report
- CPM (critical part method): **longest path** (if any activity along the critical path is delayed entire project will be delayed)

927. A. Cost effective analysis

CEA: best for healthcare as measures outcome in DALY

928. A. Is a part of input output analysis

Network Analysis: Graphic plan of all events & activities

- PERT (programme evaluation & review technique): updated progress report
- CPM (critical part method): **longest path** (if any activity along the critical path is delayed entire project will be delayed)

929. A. Cost benefit analysis

CBA: When economic benefits of any program are compared with cost of program

930. C. Ultimate desired state towards which objectives and resources are directed

Concepts	Definition	Example
Target	• Discrete activity which helps measure extent of objective attainment • Concerned with factors involved in a problem	• Immunization 90% • Hospital delivery 100%
Objective	• Planned & precise end point of all activities • Concerned with the problem	Reduce IMR to 30
Goal	• Ultimate desired state to be achieved • Not constrained by time or resources • May not necessarily be attainable	Achieve MDG 4
Mission	• Statement of purpose • Time bound	

931. D. Total quality management

In Total quality management costing forms an integral part

932. C. Proceeds from target to resource

Traditional/ Incremental/ Historic	Zero/ Priority based budgeting
Only variances in budget from past years are justified Baseline expenditures is automatically approved	Every item of budget must be approved (rather than only the changes)
Proceeds from resource to target	Proceeds from target to resource (reverse direction)
Time is less	Time is more
Corruption & money laundering	Most efficient manner of financial management

933. A. ABC

Inventory Management

VED (Vital Essential Desirable)	ABC (Always Better Control)	SDE available	FSN
Vital drugs: absence can't be tolerated	A: 70% budget (10% items)	Scarcely	Fast moving
Essential drugs: Can be tolerated for sometime	B: 20% budget (20% items)	Difficultly	Slow moving
Desirable drugs: for long time	C: 10% budget (70% items)	Easily	Non moving

934. A. Cost effective analysis

Management Techniques

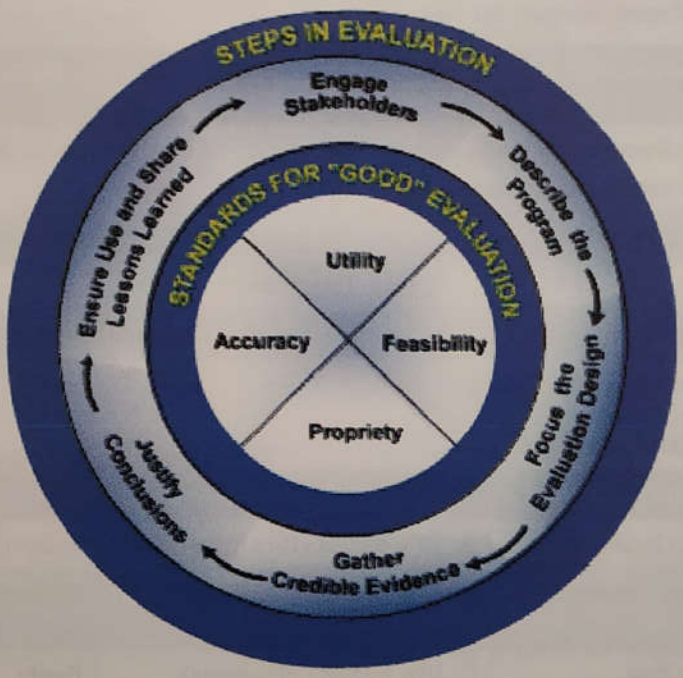
Methods based on behaviour sciences	Quantitative methods
1. Organizational design	1. Cost benefit analysis
2. Personal management	2. Cost effective (system analysis) & cost utility analysis
3. Communication	3. Cost minimization

4. Information system	4. Input-output analysis
5. Management by obj.	5. Cost accounting
	6. Network analysis a. PERT (programme evaluation and review technique) b. critical path method
	8. PPBS: Planning programming & budgeting system
	9. Work sampling

935. B. Drug A is more cost effective than drug B for treating children

	Drug A	Drug B
Adult	95%	47%
Children	95%	90%
Cost	200%	100%
Summary	More cost effective for adults More effective for children	More cost effective for children

936. A. Repeatability



937. B. Large hospitals

Large hospitals cater to make number of patients and hence called ivory towers of disease

938. D. Work sampling

Work Analysis

- Done by IT companies, on **nurses**
- Systematic observation & recording of activities of individuals
- Provides quantitative measurement of various activities

Health Care of Community – Questions

939. One rural PHC is located for a population of:

a. 5000 b. 30,000
c. 100,000 d. 500

940. Eligible couple register is maintained at:

a. Sub- centre b. PHC
b. CHC d. District headquarter

941. Three tier system of health care delivery in rural area in India is based on the recommendations of:

a. Bhore committee
b. Chadah committee
c. Srivastava committee
d. Mudaliar committee

942. Elements of primary health care include all of the following except:

a. Adequate supply of safe water and basic sanitation
b. Prevention & control of local endemic disease
c. Providing employment to every youth
d. Immunization against major infectious disease

943. Match the institutions with levels:

A	Panchayat	I	Village
B	Panchayat Samiti	II	District
C	Zila Parishad	III	Block

a. A-III, B-II, C-I
b. A-II, B-III, C-I
c. A-I, B-III, C-II
d. A-I, B-II, C-III

944. A psychiatrist is not posted at:

a. PHC
b. Military hospitals
c. District hospitals
d. Hospital with medical colleges

945. Principal Unit of Administration of India is:

a. Centre b. State
c. District d. Village

946. Match list A with List B

A	Shrivastav	I	Malaria workers to look after FP work
B	Chadah	II	Integration of health services
C	Kartar Singh	III	Led to creation of health guides
D	Jungalwallah	IV	Led to creation of MPW

a. A3; B4; C1; D2
b. A3; B1; C4; D2
c. A2; B1; C4; D3
d. A2; B4; C1; D3

947. A Sub- center is manned by:

a. Medical officer
b. Multipurpose worker
c. Health assistant
d. Aanganwadi worker

948. Which is not a functions of female health worker?

a. HBPNC
b. Train ASHA's of the sub - centre
c. Conducts deliveries
d. Chlorination of water

949. All of the following are pillars of primary health care except:

a. Equitable distribution
b. Community participation
c. Health education
d. Inter- sectoral coordination

950. Alma Ata conference was held in:

a. 1948 b. 1956
c. 1977 d. 1978

939. b	940. a	941. c	942. c	943. c	944. a	945. c	946. b	947. b	948. d
949. c	950. d								

951. All of the following are state responsibility for health except:

a. Vital statistics
b. Promotion of research through research centre & their bodies
c. Prevention of adulteration
d. Prevention of communicable disease

952. ASHA is posted at the:

a. Village level
b. Community Health centre
c. Primary Health centre
d. Sub- centre

953. Staff at PHC include A/ E:

a. Pharmacist
b. Clerk
c. Laboratory technician
d. Paediatrician

954. Highest level of integration in health service is:

a. PHC
b. Sub centre
c. CHC
d. District hospital

955. Which of the following is true about female health worker?

a. Acts at PHC level
b. Covers population of 5000 population
c. Chlorinates well at regular intervals
d. Makes at least 3 post natal visits for each delivery

956. Emphasis shifted from urban to rural services:

a. Equitable distribution
b. Community participation
c. Inter- sectoral coordination
d. Community participation

957. Which of the following is not a provided in aanganwadi?

a. Immunization of children
b. Non formal preschool education
c. Sanitation
d. Health education

958. Minimum number of beds in community health centre:

a. 4-6
b. 15
c. 30
d. 100

959. Most common operation done by an ophthalmologist in district hospital:

a. SICS
b. Trabeculectomy
c. Bilateral lamellar tarsal rotation
d. Dacryocystorhinostomy

960. Following are the objectives of IPHS for PHC except

a. Provision of comprehensive PHC
b. Achievement of acceptable quality of health care
c. Provision of accident and emergency care
d. Making services more responsive to the needs of the community

961. Optimum unit of preventive curative and promotive services in health care is known as

a. Appropriateness
b. Availability
c. Adequacy
d. Comprehensiveness

962. "Mobile medical care" is provided services to all except:

a. Primary health care
b. Secondary health
c. Tertiary health care
d. Sub center

963. An example of secondary health care level would be:

a. Primary health center
b. Sub center
c. Community health center
d. Apex health institutions

951. b	**952. a**	**953. d**	**954. d**	**955. b**	**956. a**	**957. c**	**958. c**	**959. a**	**960. c**
961. d	**962. c**	**963. c**							

Health Care of Community – Explanations

939. B. 30000

Accepted Population Norms

1 per	Worker
5000 (rural) & 10000 (urban)	Nurse; HW M/ MPW; HW F/ ANM
10,000	Pharmacists; LTs
30000 (plains) or 20000 (hilly)	Health assistant
400 – 800 (plains) or 300 – 800 (hilly)	Anganwadi worker
800	ASHA (No TBA & dai any more in health system)
2500	USHA
3500	Doctor

940. A. Sub- centre

Eligible Couple:

- Definition: a currently married couple with wife in reproductive age group (20 – 44 years)
- 150 – 180 EC's per 1000 population in India
- **EC register maintained a at sub centre**

941. C. Srivastava committee

Committee	Year	Recommendations
Bhore / health survey & development committee	1946	Short term measure: **PHC, sub centres** Long term: **secondary health system** **Social physicians** (3 months of training in PSM in medical curriculum) 3 million plan
Mudaliar/ health survey & planning committee	1962	**All India Health Services** (like IAS) **Strengthen district hospitals with specialist services**
Chadah	1963	1 **basic health worker** per 10,000 population (**for malaria & FP**) **Health assistant** to supervise
Committee	Year	Recommendations
Mukherji	1965	Delink malaria workers from family planning

Jungalwalla/ Committee on integration of health services	1967	Unified cadre Common seniority Recognition of extra qualifications Equal pay for equal work Special pay for specialized work No private practise
Kartar Singh/ Committee on MPW under HF Planning	1973	ANMs to be replaced by FHW Other workers to be replaced by MHW Health assistants MOIC
Committee	Year	Recommendations
Shrivastava/ Medical Education & Support Manpower	1975	ROME (Reorientation of Medical Education) Para & semi professionals from the community: Village Health guide, MPW, Health assistants 3 tier rural health infrastructure/ scheme (RHS) Development of referral service complex
Krishnan	1983	Urban revamping scheme & integration of PHCs
Bajaj	1986	Formulation of National Medical & Health Education Policy National Health Manpower Policy Education Commission
Tendulkar	2011	BPL cut offs
HLEG (High level expert committee)	2013	UHC (Universal Health Coverage) 3.5 years B Sc community health

942. C. Providing employment to every youth

Components of Primary Health Care:

- E: Education about health problems & their control
- L: Locally endemic disease: prevention & control
- E: essential drugs
- M: MCH care & FP
- I: Immunization
- N: Nutrition
- T: Treatment of common disease & injuries
- S: Safe water supply & sanitation

943. C. A-I, B-III, C-II

- 3 levels of rural self government linking village to district
- Village level: Panchayat
- Gram Panchayat (level of sub centre)
- Gram Sabha
- Nyaya Panchayat
- Block level: Panchayat samiti/ Janapada Panchayat
- District level: Zila Parishad/ Zila Panchayat

944. A. PHC

PHC is manned by graduate doctors like MBBS, BDS, AYUSH specialists

945. C. District

In the health system the planning is done from district levels (district health action plan)

946. B. A3; B1; C4; D2

Refer to explanation 3

947. B. Multipurpose worker

Subcentre	
Type A	Type B
All facilities except the facilities of delivery	MCH sub centre
Essential staff: 1 ANM & 1 male health worker Desirable: 1 + 1 ANM	Essential staff: 2 ANM & 1 male health worker Desirable: 1 staff nurse or ANM (If 2 or more deliveries in a month)
Primary Health Centre (PHC)	
< 20 delivery/ month is the load	≥ 20 deliveries per month

948. D. Chlorination of water

Job Responsibilities of ANM

HW Male	HW Female
Malaria slide (NVBDCP)	ANC
Sanitation & chlorination	HBPNC
Sputum collection	Cu T
ORS distribution	Conduct deliveries
	Training of ASHA's
Home visits	
IMNCI	
Vital events registration	
Immunization	
DOTS Provider	

949. C. Health education

Primary Health Care:

- Alma Ata 1978, Kazhakistan, former USSR
- Hallmarks: 4 A's
- Affordability
- Acceptability
- Accessibility
- Availability
- Principles/ pillars: 4 A ICE
- Appropriate technology: demonstration of making ORS
- Inter sectoral co ordination
- Community Participation
- Equitable distribution: reason for emphasis of rural areas in comparison to urban areas

950. D. 1978

- Alma Ata 1978, Kazhakistan, former USSR

951. B. Promotion of research through research centre & their bodies

Functions:

(1) Union list

1. International health relations and administration of port quarantine
2. Administration of Central Institutes such as All India Institute of Hygiene and Public Health, Kolkata.
3. Promotion of research through research centers
4. Regulation and development of medical, pharmaceutical, dental and nursing Professions
5. Establishment and maintenance of drug standards
6. Census and collection and publication of other statistical data
7. Immigration and emigration
8. Regulation of labor in the working of mines and oil fields
9. Coordination with states and with other ministries for promotion of health

(2) Concurrent list

The functions listed under the concurrent list are the responsibility of both the union and state governments.

1. Prevention and extension of communicable diseases
2. Prevention of adulteration of food stuffs
3. Control of drugs and poisons
4. Vital statistics
5. Labor welfare
6. Ports other than major
7. Economic and social planning
8. Population control and Family Planning
9. Preparation of health education material for creating health awareness through Central Health Education Bureau.
10. Collection, compilation, analysis, evaluation and dissemination of information Through the Central Bureau of Health Intelligence
11. National Medical Library

952. A. Village level

ASHA is posted at the village level; current guidelines are 1 ASHA worker for 800 population

953. D. Paediatrician

There are 15 staff members posted at a PHC; 1 to 2 graduate doctor, 2 to 3 nurse, 1 male & female assistant, 1 driver, 1 clerk, 1 lab technician, 1 pharmacist, 3 to 4 class IV employees

954. D. District hospital

District hospital is where all the programs converge in India

955. B. Covers population of 5000 population

a. Acts at PHC level – acts at sub centre level
b. Covers population of 5000 population
c. Chlorinates well at regular intervals – done by health care worker male
d. Makes at least 3 post natal visits for each delivery – 2 PNC visits

956. A. Equitable distribution

Equitable distribution means the needy areas would get more services so healthcare is more provided in rural areas

957. C. Sanitation

Services at Aanganwadi:

- S – Supplementary Nutrition
- H – Health check up
- I – Immunization
- Ne – Non-formal education
- R – Referral
- He – Health education

958. C. 30

At CHC there are 30 beds; PHC 4 to 6 beds in the IPD

959. A. SICS

Most common operation is done for cataract which is SICS as PHACO can't be generally done at district hospital as apparatus for PHACO is generally not available

960. C. Provision of accident and emergency care

Refer to explanation 4

961. D. Comprehensiveness

Comprehensiveness defines services which suit the population most by providing both curative and preventive services

962. C. Tertiary health care

Tertiary care hospitals provide out reach services to the needy areas using mobile medical vans

963. C. Community health center

Level of Health System	Health system
Primary	Subcenter, PHC
Secondary	CHC, FRU, DH
Tertiary	Medical colleges

International Health – Questions

964. Which of the following statement is incorrect about WHO?

a. Objective of WHO is attainment by all people of the highest level of health
b. Headquarter is located in Geneva
c. WHO is a non-specialized political agency of United Nations
d. World health assembly is the health parliament and supreme governing body of the organization

965. Which of the following health agencies & location of their headquarters' is correct?

A	WHO	I	Rome
B	UNICEF	II	New York
C	FAO	III	Geneva
D	International Red Cross	IV	Rome

966. UNICEF'S GOBI campaign, 'O' stands for:

a. Oral contraceptives
b. Oral rehydration therapy
c. Obesity
d. Occupational hazards

967. Highest funding for reproductive health is by:

a. UNFPA b. UNICEF
c. ILO d. WHO

968. All disease are included in internationally notifiable disease except:

a. Plague b. Cholera
c. Yellow fever d. TB

969. Disease under international surveillance includes all except:

a. Louse borne typhus fever
b. Relapsing fever
c. Paralytic polio
d. Yellow fever

970. Tropical diseases targeted for research and training by WHO include all except:

a. Trypanosomiasis
b. Filariasis
c. Schistosomiasis
d. Onchocerciasis

971. Emporiatrics refers to study of:

a. Occupational disease
b. Air pollution
c. Environmental factor
d. Health of travellers

972. Quarantine was originally introduced as a protection against:

a. Plague b. Tuberculosis
b. AIDS d. Malaria

973. Contribution of Germany to public health:

a. Germ theory
b. Pasteurization
c. Social medicine
d. Compulsory sickness benefit

964. c	965. b	966. b	967. a	968. d	969. d	970. d	971. d	972. a	973. d

964. C. WHO is a non-specialized political agency of United Nations

World Health Day:

- 7TH APRIL 1948 (WORLD HEALTH DAY)
- Constitution came to effect
- Theme (2019): same as that of 2018 – Universal Health Care
- HEAD QUARTERS: GENEVA, SWITZERLAND
- Objective: Attainment of highest level of health by all people
- World Health Assembly: Health parliament & supreme governing body of organization
- Leaves: Olive leaf
- 6 Regions (South East Asia): Pakistan not a part of it

965. B. UNICEF II New York

Health Agency	HQ
WHO	Geneva (Switzerland)
ILO (1st specialized agency of UN in 1946)	
International Red Cross (IRC)	
FAO	Rome
UNICEF	New York
UNDP	

966. B. Oral rehydration therapy

GOBI FFF for child health revolution

- Growth Monitoring
- Oral rehydration
- Breast Feeding
- Immunization
- Food supplements
- Female education
- Family spacing

967. A. UNFPA

- UNFPA
  - highest funding for reproductive health
  - United Nations Funding Population Agency
- World Bank
  - Provides loan for economic growth
- Junior Red Cross
  - Village up lift ment
  - Prevent epidemic
  - Military hospital work
- UNDP
  - Development of human & natural resources in a country (technical assistance)

968. D. TB

TB is notifiable in India only

969. D. Yellow fever

Disease's under International Health Surveillance:

Group I Diseases	Group II Diseases
Even a single case of	Cholera
• Small pox • Polio caused by wild polio • Human influenza caused by new serotype • SARS	Pneumonic Plaque
	Yellow fever
	Viral Hemorrhagic fever
	West Nile
	Dengue
	Rift valley
	Meningococcal

970. D. Onchocerciasis

Tropical Diseases Targeted for Research and Training (WHO)

- Malaria
- Filaria
- Leishmania
- Schistosomiasis
- Trypanosomiasis
- Leprosy

971. D. Health of travellers

Branch of Medicine	Study of	Example
Emporiatrics	Prevention and management of health problems of international travellers	Yellow book
Nosology	Classification of diseases	ICD
Ergonomics	Right man in right job	

972. A. Plague

Plaque

- 1st disease for which quarantine was introduced in Europe
- Concept: Croatia
- **Ships, crews, travellers were detained for a 40 day period**

973. D. Compulsory sickness benefit

Concept	Country
Start family planning programme	India
Start blindness control programme	
Launch the reduced osmolarity ORS	
Pasteurization; Germ Theory	France
Socialized Medicine	Russia
Compulsory sickness insurance	Germany

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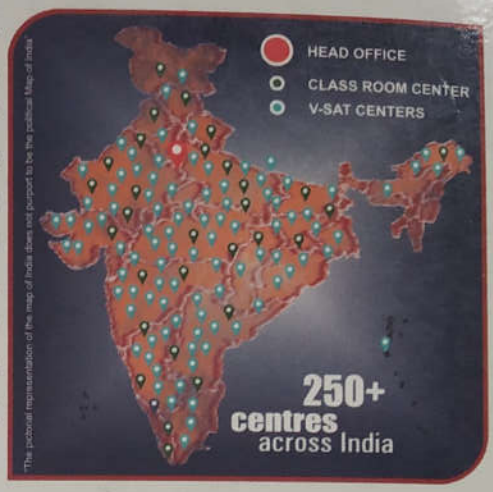

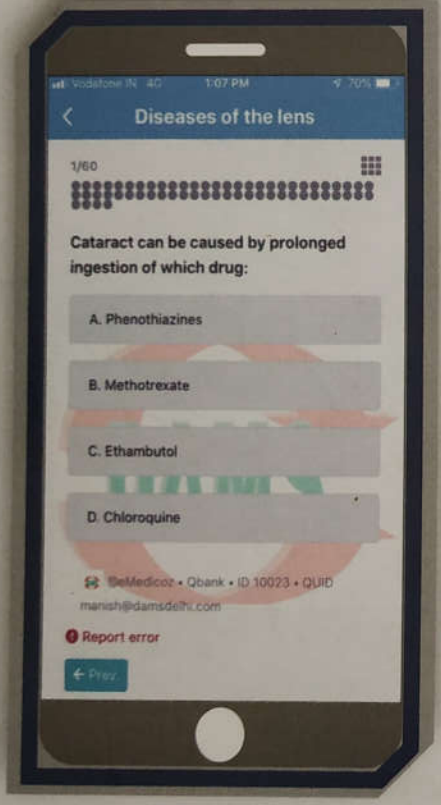

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